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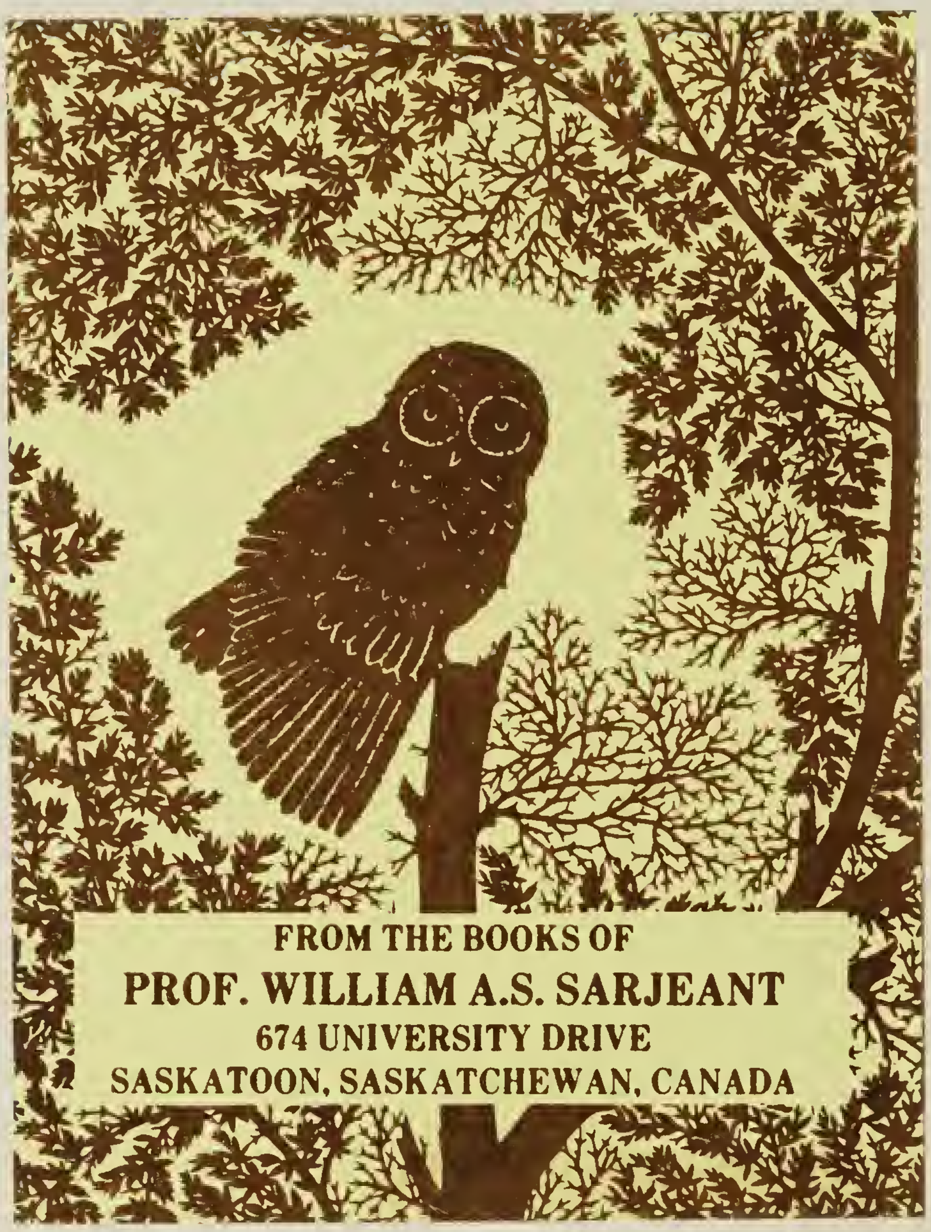

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BLUE JAY

March, 1979

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PRAIRIE POTHOLES*

H. LEONARD SAWATZKY, Geography Department, University of Manitoba, Winnipeg, Manitoba.

I am going to discuss the hydrological, biological and economic aspects of prairie potholes, but from the perspective of a practising farmer, and not strictly that of a geographer. Much of what I have to say reflects my own land-management decisions and their ecological and economic consequences. I acknowledge the tremendous difficulty of isolating any single variable in the complex interactions of many variables: precipitation, temperature, soil chemistry, soil structure, landscape configuration, and so on, to say nothing of relatively non-variable factors (often unrecognized) which affect management decisions.

To a significant extent, the remaining wildlife habitat occurs on land which is privately owned. Farmers and wildlife interests have often been thrust into adversary roles, but farmers are nevertheless usually successful in continuing to carry out their "land improvement". To a great degree, however, it is not the farmers but anachronistic background institutions which are at fault.

Take the average prairie slough or pothole. It captures local runoff and provides aquatic and dry land habitat for a wide range of birds and animals, while at the same time recharging the groundwater and diminishing water loss from the region through surface flow. Collectively, the slough and pothole, left to do their job, confer many benefits, esthetic and practical. Not the least of these are the reductions in erosion and downslope flooding which, by their delaying action, they collectively achieve. Yet, although farmers do not deny these facts, they persist in draining and ditching, "improving" their land, and destroying habitat for wildlife. What are the reasons for this? I will discuss three points that have become evident from my observations and research, and that of my students.

Firstly, the Canadian grain marketing system encourages farmers to "improve" their land because the acreage on which delivery quotas are based can be increased by the addition of non-native pasture, new breaking, and the like, up to one-third of the other declared acreage. Thus the farmer who has 450 eligible quota acres in crop may add to his quota-entitled acreage as much as 150 acres of non-native pasture and new breaking.

Secondly, when land is assessed as a basis for taxation, a value is placed on "unimproved" land and wasteland. In the majority of cases the owner therefore thinks such land should yield him some economic return.

Thirdly, there is a pervasive notion that elaborate drainage works are essential throughout the agricultural portion of Manitoba. Yet, the meteorological record directly contradicts this. Nowhere in agro-Manitoba is there a long-term or even medium-term surplus of moisture.

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*Condensed version of a paper presented at the 14th Seminar on Breeding Biology of Waterfowl, Delta Waterfowl Research Station, Delta, Manitoba, August 20-22, 1978.

The ratio of precipitation to potential evapo-transpiration ranges from approximately 1:1 in the northeast sector, to an average annual deficit of 150 mm or more in the southwest. The occasional surpluses that do accrue are due primarily to two factors. Winter snows, largely owing to inappropriate land management practices, tend to melt quickly and run-off over frozen ground. The same inappropriate practices have, over the years, resulted in mineralization, formation of plow-pan, etc., which have reduced the hydraulic conductivity of our agricultural soils to a level well below the potential rate of precipitation. Even in its virgin condition, much of our soil (particularly our heavier soils) had a hydraulic conductivity of 10 mm per hour or less. Owing to land management practices destructive of humus (chiefly summerfallowing and the burning of crop residues), this has been generally reduced to one-half that figure or less. We have then, in every growing season, the prospect of one or more rains at rates of 25-50 mm/hour, or even more, falling on thirsty plants rooted in soil with a reserve field capacity equal to or in excess of the total precipitation, but subject to a rate of absorption of 10 mm, 5 mm or even less, per hour. The result — frequent instances of massive runoff, on-farm ponding and drown-out, and even occasional regional flooding in downslope areas, despite the overriding shortfall. The reaction has been to call for more drains on one hand and more control structures on the other. The engineering fraternity, projecting foresight from hindsight, appear to have accepted the overall situation in respect to rates and volumes of runoff (and the consequent threat of floods) as inevitable, and to believe that construction of reservoirs and control structures is the only available remedy, cost what they may. Yet our runoff volumes and flooding problems — insofar as they are a consequence of management practices — go right back to the first two factors cited, which encourage the farmer to "improve" as many acres as possible on his farm.

In the light of this, I want to propose a few changes which I believe could exert a modest but pervasive influence upon land management decisions, in the interest of both farmers and wildlife. I also want to suggest that wildlife interests might promote their own objectives while at the same time building goodwill and reducing conflicts-of-interest between themselves and the major land-use decision-makers.

Firstly, I would suggest that pressure be brought to bear upon the Federal Government and the Canadian Wheat Board, to modify the quota-entitlement regulations. I would propose that, up to perhaps a maximum of 20 acres per quarter-section, "unimproved" acreage be made eligible for transfer into quota entitlement, in much the same way as "improved" non-cropped acreage is now eligible. This would remove much of the incentive to "improve" residual farm acreage, often in ways best described as "mutilation", particularly when slough and pothole bottoms prove to be saline and incapable of producing crops. Considering that most of the "unimproved" land in agro-Manitoba is situated in areas where the range of commercial crops is pretty much restricted to those which are subject to quota, such a modification would also introduce an element of "equal-opportunity". On my own farm, situated in the Agassiz Basin near the US border, I plant half my acreage to crops which are subject to quota, and half to others. I am thus exercising my options in such a way

A prairie pothole filled with spring runoff.

Gary W. Seib

as to effectively double my delivery quota, by the simple device of transferring my non-quota acreage to wheat, barley, and other quota crops. However, outside of the Pembina Triangle and the Portage Plains, which in any event have little "unimproved" land left, this is not a generally available option. In these other areas, therefore, my proposed modification of the quota system should be advantageous to farmers.

I think 20 acres per quarter-section s a fair figure, for two reasons. Firstly, there are now relatively few farms left with more than that number of "improvable" unimproved acres per quarter. Secondly, one should discourage the creation of a land market based fundamentally on the attached delivery quota entitlement. Special consideration might be given to a higher acreage figure in cases where highly desirable wildlife habitat areas greater in extent than 20 acres per quarter section occur, perhaps subject to long-term dedication to "non-improvement". If the Wheat Board objects to these suggested acreage increases, I propose that the transfer of "unimproved" acreage be achieved at the expense of summerfallow, which now carries the transfer entitlement. Throughout most of agro-Manitoba, recent scientific investigations have shown that summerfallowing, which used to be practiced for moisture conservation and weed control not only meets these goals poorly, but has certain major pernicious effects, particularly through upward translocation of salinity into the root zone, and because it contributes to runoff and erosion by water and wind. Fallow land placed in grass or forage would continue to be eligible for the quota entitlement. Continuous grassland cropping, without much intervention by man, is one way of describing agro-Manitoba as most of it was when the Great Spirit was farming it by himself, from the time the last glacial age waned until a hundred years or so ago.

In the matter of taxation, I would propose that all land assessed as "wasteland" be removed from the taxable land base, and the tax burden be transferred, on a municipality-wide basis, to cultivated land. Similarly, one-half the tax burden currently imposed on land in native hay and woodlots might be shifted to the cultivated acreage. The effect should be to deter the invasion and destruction of residual acreages of marginal and sub-marginal land whose optimum long-term function may perhaps be best achieved by leaving it in its present state.

Last winter, with a team of four graduate students from the Natural Resources Institute, I carried out a study of the R.M. of Harrison and found that these suggestions appeared workable. This does not mean that the farmer cannot have an economic yield from such wasteland. Wildlife biologists agree that farmers might use such land for grazing and/or haying practically without restriction after about the second week of July, by which time ground-nesting birds have reared their young.

Thirdly, the obvious answer to problems that are deemed to necessitate costly drainage systems is the modification of land-management practices to capture and place in reserve incoming moisture *where it falls at the rate that it falls*. Two major benefits would accrue. Crop yields would inevitably be improved because we would be realizing the potential inherent in the capturable precipitation. Let us not forget, either, that the nearer to the optimum the soil moisture is, the better the results from fertilizers and herbicides. Retention of organic matter and maintenance of high infiltration rates are important; in 100 years we have reduced the legacy of some thousands of years by half or more. However, it need not take thousands of years to make up the lost ground. Our farming practices actually come near to simulating a simplified grassland ecology with emphasis on annuals. We can grow great amounts of organic matter, and by eliminating fire, which used to be a limiting factor, rapidly restore even badly mineralized soils to much higher levels of hydraulic conductivity and field capacity than they now possess, or for that matter, possessed in their virgin state.

The incidence of both localized and generalized flooding, with the losses that these imply, could and would be much reduced. Few persons realize the impressive amounts of water that gather as a result of even a light runoff from a modest area. Thus, 25 mm of runoff from one square mile translates into 65,000 cubic metres (52 acre-feet, or 13 million gallons), 10 mm of runoff from a drainage basin such as that of the Pembina River (3300 sq. mi.) yields some 85 million cubic metres (68,000 acre feet). Over the Red-Assiniboine watershed, embracing some 111,000 sq. mi., 10 mm of runoff generate a total of over 2.8 billion cubic metres (2.25 million acre-feet) or roughly one-third the average annual discharge as measured at Winnipeg. If lost as runoff, it represents a tremendous destructive force, especially since, by constantly amplifying our

Prairie potholes provide important habitat for waterfowl such as this Northern Shoveler drake. *Doug Gilroy*

drainage networks, we have virtually guaranteed its progress from higher to lower elevations at great volume and velocity. Although only 37,500 sq. mi. of the Red-Assiniboine watershed lies within Manitoba, and although only about 70% of this area is in agricultural use, this still leaves 26,250 sq. mi. where Manitobans can take the initiative in changing water management through land management. Since snowmelt accounts for the bulk of the annual runoff, the retention of an additional inch of moisture from the annual snowmelt in Manitoba alone would reduce the total Red-Assiniboine runoff by 1.4 million acre-feet — 20% of the annual average. Total discharge, however, tends to fluctuate some 50% to either side of the mean. Let us assume, therefore, that Manitoba farmers accept the challenge of capturing an additional inch of snowmelt. What effect could that have on runoff peaks, even though our neighbours in Saskatchewan and the US make no such attempt? Relative to the 1950 flood, that achievement would have reduced the rate of discharge at Winnipeg from 103,400 c.f.s. to 95,000 c.f.s., or by 25% of the excess of discharge over the river's bankfull capacity. There would still have been major flooding, both inside and outside the city, but the size of the devastated area, considering the extreme flatness of the terrain, in which even modest additional overspill floods large additional areas, would have been much smaller. An equivalent performance by Saskatchewan would have cut the rate of overspill to roughly half of what it was, and the same achievement by our American neighbours would have reduced it to one-quarter. All other arguments aside, such an achievement would not only have benefitted the headwater region of the basin, in which the runoff period was followed by a dry spell lasting until late June, but would have forstalled tens of millions of dollars in property losses and hardships. Indeed, had the farmland within the whole Red-Assiniboine basin been in a condition to retain an additional inch of snowmelt or subsequent rain, it is likely that no flood at all would have occurred. The reasons are simple: firstly, to achieve it at all, the ground would have had to have had a relatively evenly-distributed snow cover. This would have meant, (a) lightly frozen ground below, capable of being infiltrated by meltwater, and (b), a uniform high reflectivity which would have retarded the rate of melt, therefore the rate of runoff and downslope accumulation, and, hence, quite conceivably, this positive time-factor might very well have disposed of the remaining flood threat.

I am persuaded that our farmers could achieve such a change, at considerable economic and environmental benefit to themselves and to the rest of society, but without incurring additional economic burdens. This is what I have concluded from my own experience of the past five years in the consistent application of these land-management ideas. I think that if we could eliminate crop-residue burning, clear tillage by disc or plow, and summerfallowing, as the land-management practices most detrimental to maintenance of land productivity, 90% of our goal would be attained.

How could this be implemented? Could the farmer be asked to sign an affidavit as to the acreage on which *none* of these malpractices had been carried on, thus qualifying him for a remission of that portion of his tax bill which represents no service to the land *per se* (i.e. essential drains, accesses, roads, etc.)? The amount of this remission would be made up to the Municipality from Provincial and/or Federal sources. Those who chose not to respond to these incentives would not be hounded, harassed or harried in any way. They would simply pay the *entire* bill, as of yore!

I believe that relatively simple incentives could motivate vastly better land management than is being currently practiced in agro-Manitoba. There is little point in isolating sloughs and potholes and other wastelands for discussion; we must consider the whole agricultural land-use pattern. It is my conviction that, if we can motivate farmers to bring the agricultural land to an optimal state of environmental health, our sloughs and potholes and other wildlife habitats can get an almost free ride on the shirt tails of that process.

FOUR RANCHER-NATURALISTS OF THE CYPRESS HILLS, SASKATCHEWAN

C. STUART HOUSTON and MARY I. HOUSTON, 863 University Drive, Saskatoon, Saskatchewan, S7N 0J8.

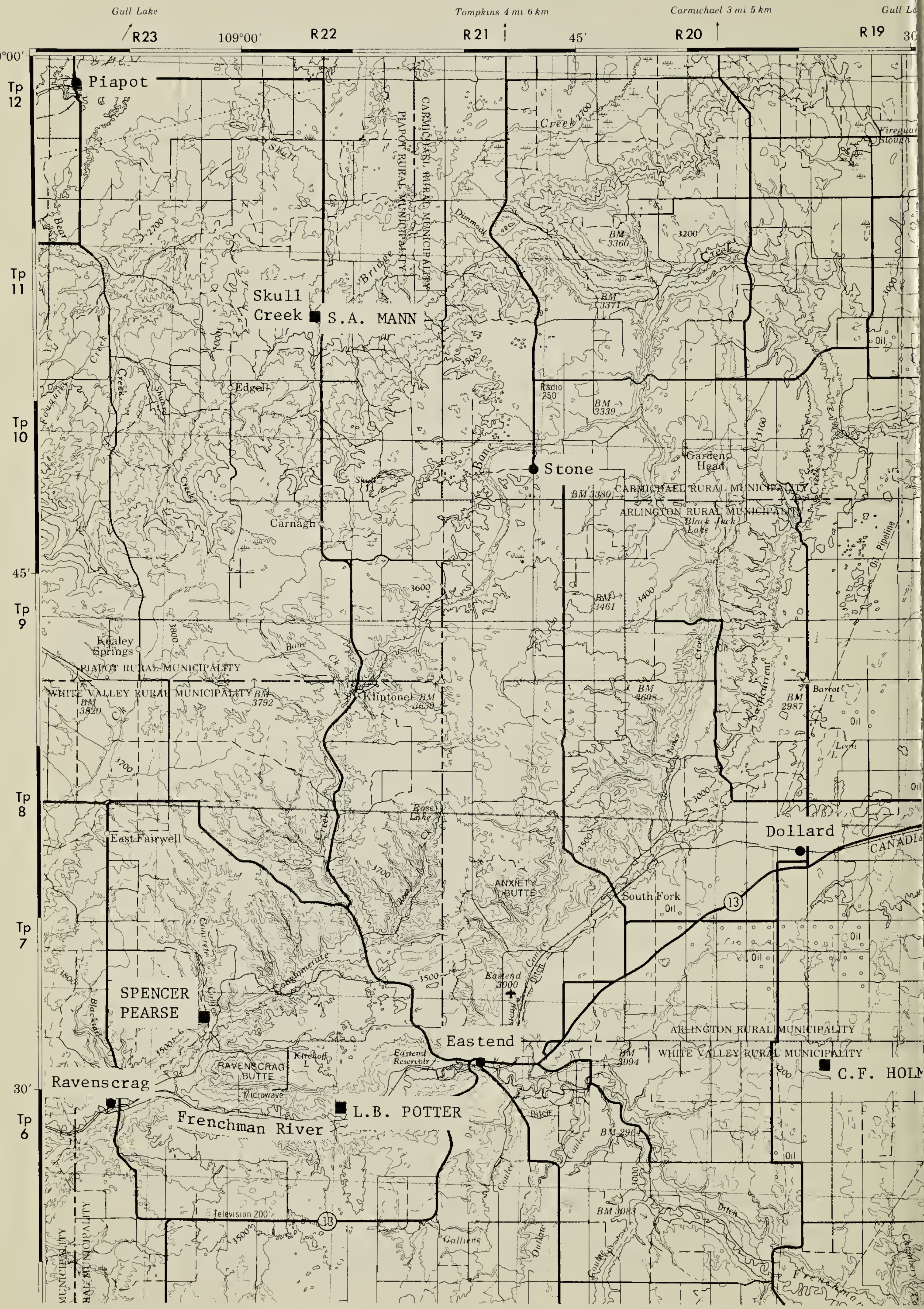
The correspondence of the late Steve A. Mann, loaned to us by his widow Mrs. Marjorie Mann, provides informal glimpses of Mann and his three fellow naturalists in the Cypress Hills area. In addition to Steve Mann at Skull Creek post office, 12 miles south of Sidewood, the other three were Laurence B. Potter of Gower Ranch near Knollys Siding, about 5 miles west of Eastend; Spencer Pearse, who lived 5 miles northeast of Ravenscrag, and Charles F. Holmes of Cloverley Farm, 7 miles south of Dollard.

Letters from Potter mentioned that he had contributed to Ernest Ingersoll's Natural History column in the *Family Herald and Weekly Star*, Montreal, so one of us checked microfilm copies of this column for 15 years, 1921 through 1935. Mrs. Mann also gave us a copy of *Our Pioneers*, published by the Cypress Hills Pioneers Association. D'Arcy Hande of Saskatchewan Archives located homestead entries.

Not only is the area perhaps the most interesting ecologically of any in the province, but nowhere else in Saskatchewan were there four resident naturalists covering a relatively small area over a period of about 40 years. Reading these letters in their entirety gave us a real feeling for the people and the times in which they lived, and we hope we can convey a little of this interest to the reader.

The letters to Mann were written in the 1930's and early 1940's, when poor roads made it difficult for these men to see each other often. Even Pearse and Potter, who lived 6 miles apart as the crow flies, got together infrequently. On 1 January, 1934, Potter wrote: "I want to visit Pearse soon, we always make a walk up his coulee in search of the elusive dipper, some of these days we may be successful." On 8 March 1936, Potter mentioned: "I have seen nothing of Pearse since mid-December when he spent a night here." On 27 May 1937, Potter said: "Pearse rode over here on the 25th but unfortunately I was away all day and never saw him."

Potter and Pearse, on the south side of the hills, had to plan a circuitous route over the hills to visit Mann on the north slope. They did not get together very often. On 8 May 1932 Potter wrote to Mann: "This afternoon Pearse and I were discussing plans for the 24th, and we agreed that we would like to have another try to get over to see you. Both Pearse and I are keen to study water birds rather than any other." A similar letter on 26 April 1933 contained the following: "Had weather permitted you would have had a visit from myself with three friends. We got as far as Stone Post Office and there began to strike real mud and steady rain. So we got the chains on and turned homewards. My friends were Mr. Jickling, Mr. Nutt, our vicar, and Corky Jones. The latter met your father many years ago and was keen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South Fork
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to render acquaintance, and I also wished him to view your collection of fossils, etc. We are of course disappointed, as one day earlier would have been all right . . . Jickling is not interested in birds, but is quite a gardener. [H.S.] Jones is the recognized fossil man. Mr. Nutt is too shortsighted for a bird man, though he is very keen on the subject."

On 26 April 1936, Potter wrote again: "I might be able to prevail on Jickling to motor me and Jones over on a Wed. to visit you people, as we attempted two [three] years ago, but that is just an idea and don't build too much on it. Too bad our communications, road and phone, are so sketchy."

Later letters continued in the same vein. On 6 November 1936, Potter said: "Sorry another year has passed without our meeting. Our old car is scarcely reliable though for long trips. Lately I was talking to Pearse and telling him how many times you have asked us both to visit you. He said 'We must go over there on Empire Day next summer,' so there is a promise we hope to fulfill." But the letter of 27 May 1937 told the same story: "Another Empire Day has come and gone without our meeting."

Potter reported more encouraging news on 4 October 1937: "We got another car this year, a model A runabout, which I like very much. Perhaps we may manage an Empire Day meeting next year."

Visitors

Whenever a museum party made a trip to the southwest corner of the province, they called in on some of the farmer-naturalists. H. Hedley Mitchell of the Provincial Museum, Regina, stayed at Potter's ranch during his first collecting trips to the south edge of the Cypress Hills in May 1917 and June 1919.[4] [5] P. A. Taverner camped on Potter's ranch in 1921,[35] and J. Dewey Soper, then of the National Museum, Ottawa, spent two weeks at Potter's ranch in 1927.[55] Fred G. Bard of the Provincial Museum collected birds at Ravenscrag and Eastend from late May to mid-June 1934, visiting with Pearse and Potter.

Potter wrote to Mann on 8 March 1936: "Fred Bard is hoping to be down this way again next summer. You might try writing him and ask him to come through by your place on his way . . . Hugh Knowles, son of the bishop, also wants to visit these parts . . ."

On 26 April 1936 Potter wrote: "If Knowles visits us I very much want to go with him and Holmes to Val Marie to visit the prairie dogs." On 6 November 1936 Potter wrote: "We expect to see Hill, the Game Commissioner and Dewey Soper, Migratory Bird Officer, here next summer." Soper indeed stayed with Potter 3-4 July 1937, and returned in early June 1939 and mid-June 1942.

On 4 October 1937 Potter wrote: "Hugh Boyd, who writes the bird articles in the Sat. *Leader Post* (Regina) called here lately along with a Mr. West, who is a professional photographer. I got them to take the Bullock Oriole nest to Regina for the Museum."

On 2 May 1944 Holmes wrote Potter about a Mr. Plowden-Wardlaw who had been staying with him since 16 April, collecting birds for the Sydney Museum in Australia. Then on 26 June Holmes reported that "Wardlaw collected over 100 specimens including 35 species and subspecies and has returned to B.C. after staying here six weeks."

Collecting Specimens

Hedley Mitchell obviously applied

The Frenchman River Valley near the Potter Ranch. *Gary W. Seib*

considerable pressure on all four men to collect specimens of species they had not seen before. A specimen was then the only way of adding a new species to the official provincial list, and sight records by amateurs, before the days of field guides and good binoculars, were regarded with great skepticism.

In the *Family Herald and Weekly Star* of 9 March 1927, Potter told of identifying 160 species in southwestern Saskatchewan in 25 years, and listed the ten he had seen only once (Screech Owl, White Pelican, Townsend's Solitaire, Lazuli Bunting, Pinon Jay, Rose-breasted Grosbeak, Blue Jay, Olive-sided Flycatcher, Eastern Phoebe, and Black-crowned Night Heron). He then explained why he had not collected some of these:

"The chief reason is that on most occasions when I was fortunate enough to see some unusual species I was either busy with farm duties or out walking without a gun. In some cases in the early days, as with the screech owl, for instance, I was not aware that I had seen anything of special note. I did not always know that in order to establish a new record it is necessary to produce the specimen."

In a letter to Mann on 8 April 1936, Potter modified his position somewhat: "Now that it has been ascertained by actual specimens that we get other species besides the Ruby-throated it will be necessary to shoot them to be sure just which the particular one may be; and of course the average bird lover doesn't shoot them, and that is mainly why we are in a state of ignorance just what population of our Hummingbirds are Rubythroats, Rufous, or Calliope. I was not greatly surprised at Calliope having been found here. It is a bird of the high lands and the Cypress Hills at our back doors rise pretty high. Moreover the Rubythroat is not recorded for Montana, whereas Rufous and Calliope are . . ."

Mann must have taken offence at

the thought of shooting hummingbirds. Potter wrote him again on 26 April 1936:

"You must decide for yourself about bagging hummingbirds, but as for the sentimental side, a man who goes out shooting ducks and taking his legal bag is really a much greater offender today. Ducks as we know are in a precarious state, that is, certain species . . . Taking two or three hummers in order to identify them and for scientific purposes will not hurt anyone. It is not in order to prove that these birds appear in August, but to decide whether the Rubythroat or other kinds are the prevailing species."

Drought and Dams

The letters through the 1930's contained remarkably little mention of the severe drought until 27 May 1937 when Potter wrote to Mann: "Isn't the grass shortage a serious business?" Again on 4 October 1937 Potter said: "I am selling [cattle] down very low, there seems no other way out, without having to worry whenever it storms. Pasture is so limited that whatever we keep will need a lot of feed."

Considering the severity of the drought, and that his neighbor Spencer Pearse had shown that irrigation could be practical on a small scale, it is a little surprising that Potter was not more enthusiastic about the dam that was built on the Frenchman below his ranch. On 8 April 1936 Potter wrote to Mann:

"The dam is about a 1½ mile above town, it will back the water a long way into my land, permanently flooding the lower end. Unless I get some kind of pumping rights I don't know that I shall be benefited in any way. I only wish it was flooding me clean out instead of just spoiling my place, as it looks like doing. From the esthetics angle, it will benefit and I shall do all I can to have the whole sheet of water made into a Wild Life Reserve. My road to town will not be affected." The next summer Potter added a non-committal report:

"There is a great body of water now created by the new dam . . . The head water extends above this place another 300 yards."

By 1942, things were looking up, when Potter summarized the year on 22 October: "On the whole, we have been fortunate . . . the barley ripened early . . . all combined by Aug. 26 . . . A pretty heavy crop, about 130 acres at 50 bushels. We threshed oats, 1000 bus. from 18 acres on Oct. 20, just before the weather broke. I have been without a man since Sept. 1st . . . I am so skinny the wind blows through my ribs."

Gardening and Horticulture

As practical pioneers, these men had large gardens, and Potter made a name for himself in horticulture as well as ornithology. He tells about this in a letter to Mann on 27 December 1941:

"We are growing a fair amount of fruit now, crab apples, plums, cherries, raspberries, goose-berries and currants of various kinds. The crop of each was pretty good, except the raspberries, but one couldn't expect a repetition of 1940 which in my opinion stands out above all others. . . . My collection of wild currants has interested the Morden Experimental Station and when they set out their new small fruit garden next spring, they are going to put all my varieties, 10 in number, apart as the L. B. Potter Collection. I sent 8 varieties to the Arnold Arboretum which is connected with Harvard University. These currants are not described in any reference book, and now they will be where they can be examined by real experts. . . . The strange part about them is they all grow within about a couple of square miles upstream and several I did not catch on to until I had planted them at home; nor can I find exactly where they came from or procure any more."

Ornithology

All four men were keen observers of bird life, and each became more proficient with experience. Potter, Holmes and Mann kept spring migration dates; from 1907 to 1909 Potter contributed his to the Territorial Natural History Society[57] and from 1909 through 1940 Potter sent his as well to the United States Biological Survey. Mann's migration dates from 1927 through 1968 are still in the possession of Mrs. Marjorie Mann. Holmes mentioned to Mann on 26 June 1944 that he had already recorded 102 species for the year.

Holmes had a scientific collecting permit and a personal collection of 500 bird study skins "representing nearly every species to be found in the Cypress Hills region." Many of these are now in the Shaunavon Museum. Holmes was interested in subspecies, and expressed surprise that Potter did not try to identify the recognizable subspecies of the Horned Lark. Holmes also had a banding permit from 1932 to 1943 resulting in one Pintail recovery in Colorado and five recoveries of Swainson's Hawks.[12] [13]

Potter attended several meetings of the American Ornithologists' Union, including the 1926 meeting in Ottawa, and Mann attended AOU meetings in Regina in 1959 and in Toronto in 1967. Mann served many years as a director of the Saskatchewan Natural History Society and served as president, 1962-64.

Potter published 9 Christmas bird counts between 1919 and 1935, 2 in *Bird-Lore* and 7 in the *Canadian Field-Naturalist*. He published 29 other articles and notes, 19 in *Condor*, 8 in *Canadian Field-Naturalist*, 1 in *Auk* and 1 in *Blue Jay*. Mann wrote 8 notes for the *Blue Jay*, and took yearly Christmas bird counts, beginning in 1943. For future use, the above references are cited at the end of this article.

Some of the more interesting records of these men are summarized in the following annotated list:

PRAIRIE FALCON. A prairie falcon nest with 4 eggs was found by Holmes and E. H. M. Knowles in the Frenchman River valley, 15 miles southeast of Eastend, on 23 May 1936.[49] Potter reported this as the first Saskatchewan nest. Holmes banded two of the young on 12 July 1936 and found another nest in 1937.

Two earlier nest records have since come to light. A set of 5 eggs was taken "in Assiniboia" 19 May 1904 by W. A. Bowman.[56] A set of 4 eggs taken by J. E. Bowman at Battle Creek, Cypress Hills, 3 May 1914 is in the National Museum of Canada.[8]

RUFFED GROUSE. Spencer Pearse was instrumental in having the ruffed grouse introduced into the Cypress Hills, the only major wooded area in Saskatchewan where they did not naturally occur. Pearse gained the cooperation of Fred Bradshaw, Saskatchewan's game commissioner, with the first release in 1922.[40] In the early months of 1924, Pearse released 23 birds at Ravenscrag after they had been live-trapped and banded by R. H. Carter, Jr., at Muscow, Saskatchewan.[6] By 1929, the hills had been populated by these birds.[40]

LITTLE BROWN CRANE. The little brown crane, *Grus canadensis*, was listed as a separate species from the sandhill crane, *Grus mexicana*, until

A Ruffed Grouse chick. R. E. Gehlert

the AOU Check-list of 1931.[1] Individuals from the dwindling breeding population of the larger race were collected from time to time n Saskatchewan, but strangely there was no verified museum specimen of the smaller race which migrates through the province in the thousands, until Steve Mann submitted a little brown crane which he collected at Skull Creek on 8 May 1930.[53] The new "species" lasted only about one year on the provincial list, until it was dropped to mere subspecific status in 1931.

SCREECH OWL. The observation by Potter in 1904 placed this species on Mitchell's hypothetical list as the first Saskatchewan sighting.[24] [54]

POOR-WILL. For two or three nights this species "appeared in the willows close to the house, uttering the 'poorwill' cry in June 1905." This Potter record was a Saskatchewan first and placed the species on the hypothetical list.[24] [54]

RUFOUS HUMMINGBIRD. The first Saskatchewan specimen was picked up dead in Eastend and sent by Potter to the Provincial Museum for identification. Other specimens, apparently of this species were found in Eastend on 18 August 1932 and on Holmes' farm south of Dollard on 31 July 1933; both were preserved.[48]

CALLIOPE HUMMINGBIRD. The first Saskatchewan specimen was shot in a Shaunavon garden on 22 August 1935 by Holmes and sent to P. A. Taverner at the National Museum.[48]

PINON JAY. Potter's sight record of this species on 16 September 1910 was Canada's first,[54] and was cited in the 5th AOU Check-List.[2] Without a specimen, it did not merit inclusion in Godfrey's *Birds of Canada*.[9]

CLARK'S NUTCRACKER. Spencer Pearse was credited by Mitchell with the first Saskatchewan specimen, collected on his ranch on 17 September 1919.[24] Pearse saw another in September 1925.[54]

MOUNTAIN CHICKADEE. The only Saskatchewan sighting was of an individual that was first seen by Mann on 30 November 1966. It visited his feeding trays daily from 3 December until the end of March and then occasionally until 22 April 1967.[22]

MOCKINGBIRD. The first published Saskatchewan sighting was by Steve Mann at Skull Creek on 2 May 1927.[47] Potter saw his first on 31 May 1928 and collected it as the first Saskatchewan specimen on 4 June.[39] Mann collected the next one he saw on 1 November 1929 and saw others in 1932, 1934 and twice in 1964.[19] [47] One was collected at Dollard by Holmes on 9 June 1935[8] and one stayed at Holmes' farm 6-16 July 1946.[11]

SAGE THRASHER. The first Saskatchewan specimen was taken by Holmes in the Frenchman River valley south of Shaunavon on 24 June 1933.[50] On 12 June 1934 Potter and Fred G. Bard together found the first Saskatchewan nest, with 5 eggs, on Potter's ranch.[50]

EASTERN BLUEBIRD. Young just out of their nest on Potter's ranch on 16 July 1922 represented Canada's furthest west nesting record for more than 50 years.[28]

TOWNSEND'S SOLITAIRE. The first Saskatchewan sighting was by Potter on 19 April 1908.[54] C. G. Harrold collected the first Saskatchewan specimen at Old Wives Lake on 9 May 1922,[10] while Holmes at Dollard collected the second specimen in 1929 and another in 1931. Potter made his second sighting on 24 April 1941[54] and Mann collected a specimen on 22 April 1945.[3]

YELLOW-BREASTED CHAT. Potter's first observation of a chat was on 7 July 1922.[28] The first Saskatchewan nest was found by Potter on 21 June 1935, when it contained one egg.[46] Potter returned 8 days later with Holmes, and the nest contained chat eggs and 1 cowbird egg.[46]

BULLOCK'S ORIOLE. The firs Saskatchewan nest was found with three newly-hatched young at Potter's ranch on 1 July 1937.[51] One o the young birds, the last in the nest was collected by Holmes on 10 July as the first Saskatchewan specimen

GREEN-TAILED TOWHEE. The second Saskatchewan specimen was taken 18 May 1944 by Holmes and described in a letter to Mann on 26 June 1944. This unpublished record is worth quoting:

"I made quite a catch, too, bagged a Green-tailed Towhee female — had never seen one previously, but knew what it was . . . the moment it landed almost at my foot in my garage door — realizing from its overall green coloring that it was something new. It then flew to a wagon box 5 ft. away, sat there a moment and raised its red cap at me. . . . I ran for my gun. . . . It took me over 3 hours to locate it again. . . . I made a good skin of it and it is now in my collection."

GRAY-CROWNED ROSY FINCH. Potter saw his first two of this species on 8 November 1912.[27] He collected a male, the first specimen received by the Provincial Museum on 27 November 1921, and then took 2 more from a flock of about 30 on 18 January 1922 and 2 more on 18 March 1922.[28] [45] [Richardson's type specimen had been collected at Carlton 95 years before, as Potter recognized.]

Then on 3 February 1933, Spencer Pearse identified a dozen rosy finches with grey faces, then known as Hepburn's Rosy Finch, *Leucosticte tephrocotis littoralis*. Pearse collected a male on 1 March, the first provincial specimen of this subspecies.[53]

LARK SPARROW. Potter's first sighting was of a singing male which e collected on 6 June 1922 as the rovincial Museum's first specimen, f a species he is sure was absent uring his first 21 years at Eastend.[28] then spread and increased in numers until by 1946 Holmes had five airs nesting in his yard.[11]

VHITE-CROWNED SPARROW. Poter and Mitchell together located the rst Saskatchewan nest, with five ggs, on Potter's ranch on 18 June 919.[23]

nd of an Era

Spencer Pearse, the first to arrive, ame from Norfolk, England and built is house in the spring of 1895, quatting for 8 years before he made is homestead entry. He was also the rst to leave, selling out and moving Vancouver Island. Pearse wrote otter after 12 months to tell of aining 20 pounds, and then wrote gain to tell of his impending arriage on 1 February 1943, 5 monhs before his 70th birthday. He died Victoria in 1964.

Laurence Bedford Potter followed years after his brother Ernest, who rrived in 1894 from Gower, Monnouthshire, England. His final illness aused his admission to the Grey Nuns' Hospital in Regina from 18-26 May 1943. He returned to sell his anch to Reuben Stredwick of Eastnd, and then went back to Regina or resection of a bowel cancer on 11 June. He reported to Mann: "My peration . . . was a tough one and eft me very weak, but I came away n July 3 and left Regina 10 days ater. My sister [M. Isabel Potter] and are now staying in rooms in Eastnd. . . . We are making trips in the ar up to the ranch and getting our elongings away. It is quite an pheaval [sic] losing one's home fter 42 years, with no settled abode n prospect."

Potter's last letter to Mann was dated 21 September 1943 and described a pleasant supper with Mr. and Mrs. J. Dewey Soper at the farm of Holmes, but later that night Potter took a "bad turn" and the doctor was called out from Eastend, 12 miles. Potter died with "intense suffering on the day following his sixtieth birthday," on 5 November 1943. Holmes wrote to Mann of "the passing of a friend of thirty-five years and one of his calibre and irreplaceable. I shall miss him terribly for neither ever saw a new bird without going into a huddle over it. It was not that I saw very much of him, but one knew that he was always there."

Charles Fredrick Holmes, who came from England via Boissevain, Manitoba, took up residence on his homestead on 8 November 1908. The third to come, he was the third to leave, retiring to Salmon Arm, B.C. in 1947.

Steve Mann was the first white child born in the Skull Creek area, in 1895. His father, James Mann, had come from Leeds, England, to Canada in 1888 and settled at Skull Creek in 1894, the year before Steve was born. Steve's father, James, died when his team bolted and knocked him down, and Steve died after being thrown against the pommel on a bucking horse, in 1968.

These men are all dead, but their accomplishments live on. We shall not see their likes again.

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[21]MANN, S. A. 1965. Early Purple Marti spring arrival. Blue Jay 23(3):150.

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[36]POTTER, L. B. 1927. The partridge versus the sharptail. Can. Field-Nat. 41:154-155.

[37]POTTER, L. B. 1927. Correct portraiture of some birds. Condor 29:200.

[38]POTTER, L. B. 1927. Freak nesting site of a magpie. Condor 28:249.

[39]POTTER, L. B. 1928. A Mockingbird in Saskatchewan. Condor 30:320-321.

[40]POTTER, L. B. 1930. Bird-life changes in 25 years in southwestern Saskatchewan. Can. Field-Nat. 44:147-149.

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[2] POTTER, L. B. 1931. The House Sparrow and the motor car. Condor 33:30.

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Eroded sandstone at Jones Peak, west of Eastend. *Gary W. Seib*

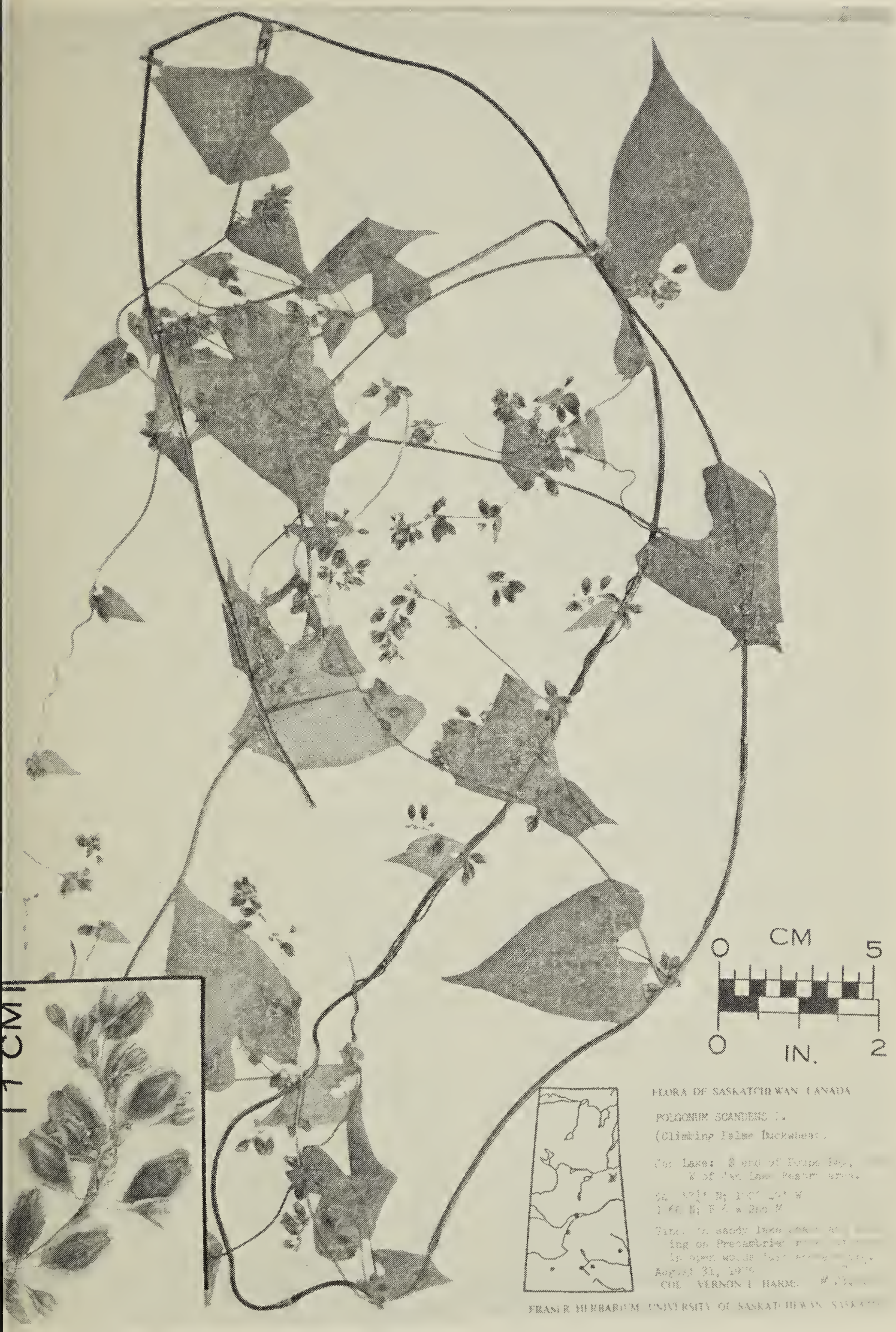
REDISCOVERY OF THE CLIMBING FALSE BUCKWHEAT IN SASKATCHEWAN

J. H. HUDSON, V. L. HARMS, Fraser Herbarium, Dept. of Plant Ecology, University of Saskatchewan, Saskatoon, and G. W. ARGUS, Botany Division, Museum of Natural Sciences, National Museums Canada, Ottawa.

In the late 19th century, before the extensive settlement and agricultural development of southern Saskatchewan, early botanical explorers reportedly found the native climbing false buckwheat (or wild buckwheat), *Polygonum scandens* L., to be widespread across the area. This is evidenced by the collections and reports of John Macoun and his son J. M. Macoun. In reference to this species in what is now Saskatchewan, the elder Macoun wrote: "Climbing over bushes at the Qu'Appelle Lakes, N.W.T. (J. M. Macoun). Forming almost impenetrable thickets near the sources of the Qu'Appelle, at Swift Current Creek, and at the eastern end of the Cypress Hills, N.W.T."[5] Today, however, the species is not known in these cited localities even though it has been searched for there, and to our knowledge there have been no other collections of it from anywhere in Saskatchewan during the present century. Neither Fraser and Russell nor Breitung listed it for the province.[3] [4] [2] Boivin apparently included southern Saskatchewan in his range for the species only on the basis of the early Macoun collections from the Cypress Hills.[1] This primarily eastern North American species is presently known in Western Canada from Jackhead on Lake Winnipeg and Gilbert Plains in southern Manitoba, and Fort Saskatchewan and the vicinity of Edmonton in Alberta, on the basis of specimens present in the Ottawa herbaria (CAN and DAO). Macoun first reported it in Manitoba from "Winnipeg and North-West Angle Road, also Turtle Mountain, 49th parallel".[5] Scoggan cited additional Manitoba records or reports from Matlock Beach on the southwest end of Lake Winnipeg, Shoal Lake, Rothwell, Brokenhead, and Spruce Woods Forest Reserve.[8] We are not prepared to comment regarding this plant's possible surviving range in Manitoba in contrast to its recorded range. However, it is noted that many of these records are from nearly a half century ago, if not more.

Recently we have found the climbing false buckwheat at two widely separated localities in eastern Saskatchewan. The collection data for these specimens are as follows: (1) South end of Doupe Bay of Jan Lake (lat. 54° 53½′ N, long. 102° 49′ W) (T 68N, R 8 W 2nd M), climbing over rock outcrops and on sandy beach just west of resort area, 31 August 1975, *V. L. Harms 23040* (SASK); and (2) Pipestone Creek Valley near Maryfield (lat. 49° 53′ N, long. 101° 27′ W) (SE¼ Sec. 1, T 11 N, R 30 W 1st M), climbing on western snowberry shrubs on heavily grazed brushy hillside, 15 July 1977, *J. H. Hudson 3388* (SASK).

John Macoun's earlier collections from Saskatchewan are as follows:


1 CM
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FLORA OF SASKATCHEWAN CANADA
POLYGONUM SCANDENS L.
(Climbing False Buckwheat)
ing on Precambrian
August 31, 19
COL. VERNON L HARMS
FRASER HERBARIUM UNIVERSITY OF SASKATCHEWAN

Figure 1: The Climbing False Buckwheat, Polygonum scandens. *The inset shows a flowering-fruiting raceme enlarged.*

Cypress Hills, 27 August 1880, *150* (GH, photo DAO); Cypress Hills, in moist thickets, 29 August 1880, *23560* (CAN); Swift Current Creek, moist thickets, 4 September 1880, *23559* (CAN). The occurrences of this species at the Qu'Appelle Lakes, as reported by J. M. Macoun or from "near the sources of the Qu'Appelle" are not supported by specimens in the Ottawa herbaria.[5]

What interpretation is to be given for the present rarity of this native buckwheat species in Saskatchewan, and its apparent absence from areas where it was reported as common nearly a century ago? Did the advent of white man's agriculture virtually eliminate this species in the province? Or more particularly, did the introduction of such Eurasian weed species as the black bindweed (wild buckwheat), *Polygonum convolvulus* L., take over its niche in naturally disturbed woodlands and shrublands here?

Our present collections indicate that this species still occurs in Saskatchewan, although these and the Alberta records could represent reintroductions rather than relictual stands. Reintroduction is suggested by the plant's occurrences in disturbed habitats and by its apparent sporadism. Yet a degree of weediness is to be expected in a native species characteristic of naturally disturbed sites. And sporadism would be expected of the surviving remnants of a native species that has had its range reduced by severe competitive pressures or by changed environmental conditions, especially at the edge of its range. It is impossible to answer the questions raised by the climbing false buckwheat in Saskatchewan until this elusive plant is sought elsewhere in the southern half of the province and information is obtained on its habitat and possible competitors, especially the black bindweed.

The climbing false buckwheat, *Polygonum scandens,* can be readily distinguished from the common introduced wild buckwheat, *P. convolvulus,* by its conspicuously scarious-winged outer sepals surrounding the shining fruits, fruiting pedicels over 4 mm (⅕ inch) long, heart-shaped leaves with broadly rounded basal lobes, and perennial rather than annual habit (see Fig. 1). It can be distinguished from the native fringed black bindweed, *P. cilinode* Michx., by its broadly winged outer sepals, lack of a ring of long reflexed hairs on the younger nodes (at bases of the conspicuous sheaths), and simple raceme inflorescences rather than much-branched panicles. The climbing false buckwheat can be distinguished from the true buckwheats, *Fagopyrum* spp., by its racemose rather than corymbose inflorescences, by the fruits remaining enclosed within enlarging winged sepals rather than protruding from the unwinged, soon-withering sepals, by the embryos in the seeds being curved and marginal rather than central in the albumen with spiralling cotyledons, and by its perennial rather than annual habit.

The climbing false buckwheat, *Polygonum scandens,* is illustrated in Fig. 1. The known distribution of this species in Western Canada and adjacent United States, based upon literature reports and specimen records, is shown on the map of Fig. 2, with the Saskatchewan records and reports dated. The United States records are taken from McGregor, Barkley, *et al.*[6]

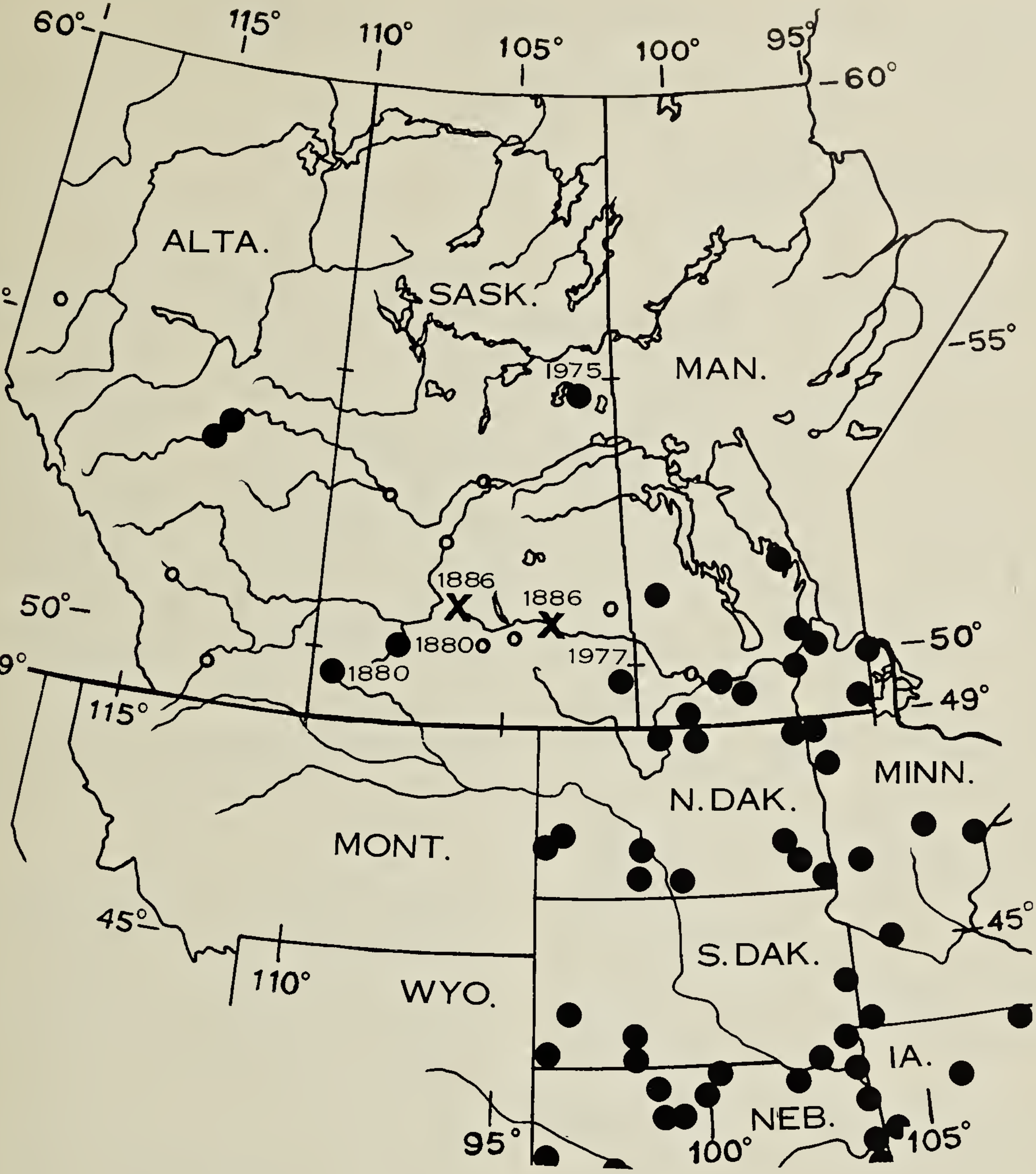

Figure 2: The Recorded Distribution of Polygonum scandens *in Western Canada and Adjacent United States. For the Saskatchewan distribution, dots represent specimen records and the "X"s literature reports whose vouchers we have not seen. The Saskatchewan records are dated on the map.*

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NORTHERN PRAIRIE SKINK RANGE EXTENSION IN MANITOBA

ARDYTHE McMASTER, 306 Brock Street, Winnipeg, Manitoba, R3N 0Y9.

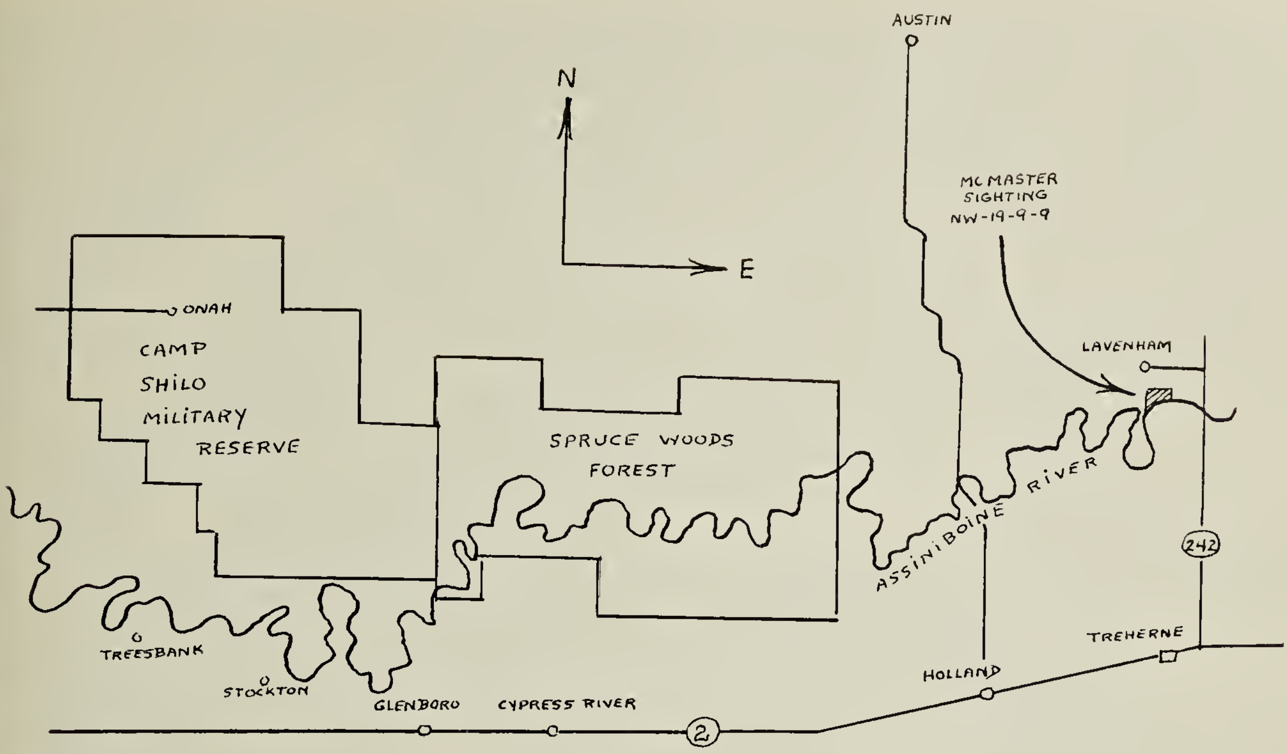
On 20-22 May, 1978, my husband Don and I, with our two children, pitched our tipi, a homemade replica of a Plains Indian tipi, on a prairie knoll on the high north side of the Assiniboine River nine miles due north of Treherne. The soil there is classified as "Stockton loamy sands",[5] loosely sodded with native prairie plants and some creeping juniper *Juniperus horizontalis*. Here we observed, over a period of three days, perhaps six, but at least two Northern Prairie Skinks *Eumeces septentrionalis septentrionalis*. We were able to catch some of the skinks, observing their smooth greenish-brown colour with lateral lines of light and dark. Some bore the deep red-orange chin patch which Conant identifies as characterizing the breeding male; some had tails whose tips were clearly darker, indicating a tail tip lost and regrown.[2] Most of the skinks we observed were in the act of observing us, having climbed up between the tipi cover and the interior lining and perched atop the lining cords which encircle the tipi interior at about four feet, affording us excellent opportunity to observe them at rest.

We believe these skinks represent sightings outside the recorded range for Manitoba.

First correctly identified by Patch in 1934, the skink was first reported by Criddle in 1919, though a painting of the skink by Norman Criddle is dated 1898.[8] [4] [9] Logier and Toner list four Manitoba skink localities: Brandon, Cypress River, Onah and Treesbank.[7] Cook summarizes the Manitoba population as follows: Onah, a deserted station on the CNR main line about 20 miles east of Brandon, and at four locations along the sandy banks and sandhills north of the Assiniboine River: just east of the junction of the Souris and Assiniboine rivers, north of Stockton, north of Cypress River, and north of Holland.[3]

There are 10 specimens preserved in collections, all from north of the Assiniboine River, of which six are from the Aweme-Treesbank area, collected by members of the Criddle family. One University of Manitoba specimen labelled "Aweme district, (Treherne) 20 July 1935" seems confusing, as Treherne is a village nearly 40 miles east of Aweme, on the south side of the Assiniboine. Cook explains that Aweme (the Criddle farm) is no longer shown on most maps and that Treherne was named for easy reference to the general area.[3] It seems easy to speculate, however, that Treherne was named erroneously, Treesbank having been intended. The Holland report (1961) at SE¼ 15-9-11 W.P.M. "about midway between the towns of Austin and Holland" still represents the most easterly record in the literature of skinks in Manitoba.

Assuming the Treherne record to be improperly described, our tipi site, NW¼ 19-9-9 W.P.M., is an easterly extension of the recorded range. It is approximately 38 miles east of both



Onah and Treesbank, 22 miles east of Cypress River, and 9 miles east of the Holland sighting. The location north of the Assiniboine River in sandy soil supports the suggestion by Bird and Cook that, "in less sandy soil the skinks would be unable to burrow deep enough to survive the colder winters".[1] [3] Having compared these records with the soil survey, I find that all are within the classification Stockton loamy sands, with the possible exception of the Cypress River specimens, depending on how far north of the village they were taken.[5] [6] If indeed soil type is the limiting factor in skink distribution in Manitoba, then our skinks were near the eastward boundary of the range, for Stockton loamy sands end abruptly less than two miles east of our tipi site.

I am grateful to Carol A. Scott for her interest, encouragement, and assistance in the preparation of this report.

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[1] BIRD, R. D. 1927. A preliminary ecological survey of the district surrounding the entomological station at Treesbank, Manitoba. Ecology 8(2):207-220.

[2] CONANT, R. 1975. A field guide to reptiles and amphibians of eastern and central North America. Second edition. Houghton Mifflin Company, Boston. xviii + 429 pp.

[3] COOK, F. R. 1964. The Northern Prairie Skink in Manitoba: a possible relic population. National Museum of Canada Natural History Papers No. 24. 11 pp.

[4] CRIDDLE, N. 1919. Additional notes on Manitoba turtles, snakes and batrachians. Ottawa Naturalist 32(7):135.

[5] EHRLICH, W. A., E. A. POYSER and L. E. PRATT. 1957. Report of reconnaissance soil survey of Carberry map sheet area. Manitoba Dept. of Agric. and Immig. Soils Report No. 7. 93 pp.

[6] ELLIS, J. H. and W. H. SHAFER. 1943. Report of reconnaissance soil survey of south-central Manitoba. Manitoba Dept. of Agric. Soils Report No. 4, 146 pp.

[7] LOGIER, E. B. S. and G. C. TONER. 1961. Check list of the amphibians and reptiles of Canada and Alaska. Second Ed. Royal Ont. Mus. Life Sc. Div. Cont. No. 53. x + 92 pp.

[8] PATCH, C. L. 1934. *Eumeces* in Canada. Copeia 1934(1):50-51.

[9] SCOTT, C. A. 1978. Pers. comm.

Horned Lizard. *Fred W. Lahrman*

NEW DISTRIBUTION RECORDS OF THE HORNED LIZARD IN ALBERTA

DAVID B. SCHOWALTER, Alberta Fish and Wildlife Division, 6909-116 Street, Edmonton, Alberta, T6H 4P2.

Stebbins indicates that the range of the short-horned lizard *Phrynosoma douglassi* in Alberta includes the area of the Cypress Hills south to the International boundary (Figure 1).[1] Described here are the first records of the species along the South Saskatchewan River and a new record from along the Milk River.

Locality Data

SE 24-14-5 W4. Approximately 10 miles northeast of Medicine Hat.

A horned lizard was located by the author and Lorna and Harry Armbruster on 16 May 1972 on a south-facing slope in badlands about one-quarter mile east of the South Saskatchewan River. Specimen was forwarded to the National Museum of Canada.

24-11-11 W4. Approximately 5 miles northwest of Bow Island.

Four individuals were located by John Gunson and the author 18 August 1976. Three more individuals were located there by the author in 1977. Rod Burns of the Provincial Museum of Alberta collected a specimen at this locality in 1977. Lizards have been found on lightly

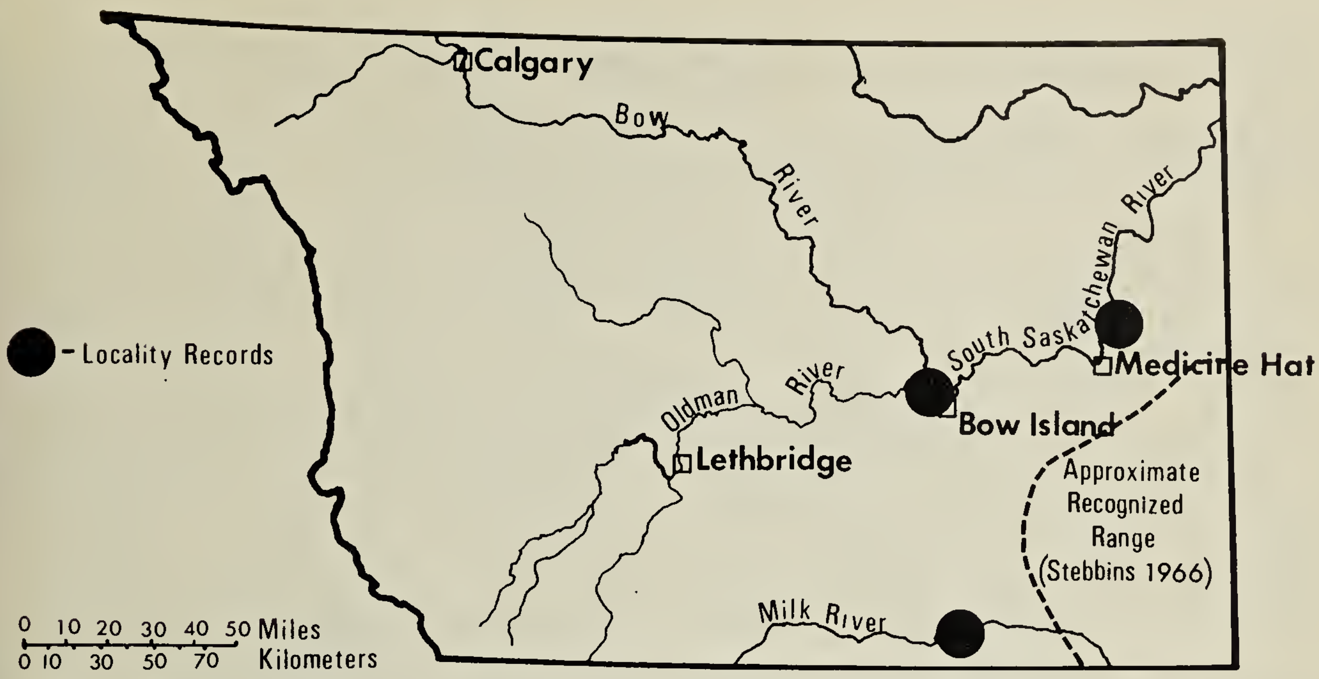


Figure 1: New distribution records and recognized range of short-horned lizards in Southern Alberta.

vegetated areas over the top one-half of south-facing banks of the South Saskatchewan River Valley.

SE 33-1-12 W4.

A specimen was located 10 July 1977 on west-facing outcrop of the south bank of the Milk River Valley by the writer. The Gilchrist family of Deer Creek Ranch, approximately two miles east of this locality, are familiar with the lizard and indicate that it likely occurs throughout the local area of badlands.

These records extend the known range of horned lizards in Alberta (Figure 1). As they were all located in more or less continuous areas of badlands, or near badlands, along the rivers the species may well be found considerably beyond the localities described.

[1] STEBBINS, R. C. 1966. A field guide to western reptils and amphibians. Houghton Mifflin Co., Boston. 279 pp.

Wild Blue Flax. *Fred W. Lahrman*

37th ANNUAL SASKATCHEWAN CHRISTMAS BIRD COUNT — 1978

Compiled by MARY I. HOUSTON, 863 University Drive, Saskatoon, Saskatchewan, S7N 0J8.

Storms and low temperatures during the Christmas season discouraged or prevented a number of bird counts from being taken. This year's total was down to 49 localities with 68 species plus 1 additional race. The additional race was the Oregon race of the Dark-eyed Junco. The commoner race — that seen on 8 counts — is the Slate-colored. There were 4 additional species seen during count period but not on count day.

This year 2 new species, a Swainson's Hawk at Webb-Swift Current and a Yellow-bellied Sapsucker at Saskatoon, plus one new race, the Audubon's Warbler (a race of the Yellow-rumped Warbler) at Fort Walsh, were recorded on count days and 2 new species, the Varied Thrush at Pierce Lake and the Common Snipe at Webb-Swift Current were added to the list of species seen during count period. This brings the 37-year total to 124 species plus 2 races seen on count days, with 8 additional species seen during count periods but not on count days.

The most unusual species was the melanistic buteo, seen at close range by Bob Peart at Webb about once a week since late fall. Although melanistic buteos are notoriously difficult to identify and although Swainson's is the least likely of them to stay this far north in winter, this bird was totally dark underneath, so that from all the references consulted, this must be a Swainson's.

This year again we extend congratulations to the very enthusiastic group at Togo, spearheaded by Cusie and Wanda May. Cusie made a round trip of 640 km to haul 4300 lb. of sunflower seeds to be distributed to the feeders; Wanda organized and compiled the daily Christmas period observations at 7 of the feeders. There are another 11 established bird feeding stations on farms in the Togo area.

Detailed information on their feeder observations; more information on habitats in other areas, and dates of species seen in count period but not on count day are available in the files.

Since Wascana Lake was allowed to freeze this fall, most of the waterfowl migrated, leaving Regina with only 3 waterfowl species. We miss their interesting extended list.

No unusual trends in species abundance were evident this year except that Hoary Redpolls were seen in only 2 localities.

Table 1. CHRISTMAS BIRD COUNT PARTICIPANTS.

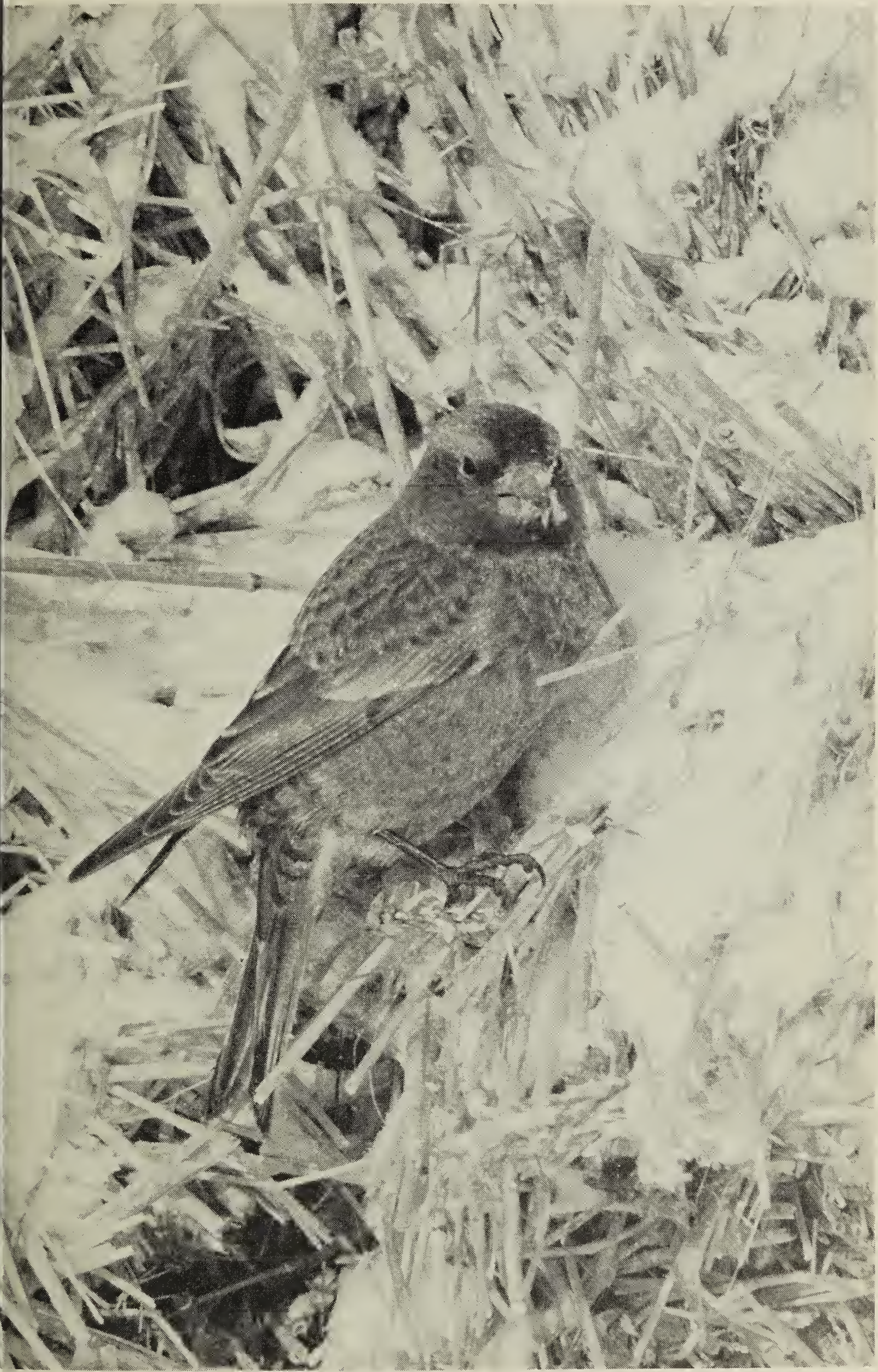
BANGOR. Mrs. A. Thompson.

BATTLEFORD-NORTH BATTLEFORD. Pern Cordery (compiler), Heywood MacDonnell.

BIGGAR. Harvey Renaud, Wayne Renaud, Guy Wapple (compiler), Robert Wapple, Rodney Wapple.

BROADVIEW. David Chaskavich, Don Weidl (compiler).

CANORA. Alfred Tataryn (compiler), Jeffrey Tataryn, Vicki Tataryn.



ray-crowned Rosy Finch. *Wayne Renaud*

DALMENY. Brian Sperling, Gilbert Sperling, Lloyd Sperling (compiler), Mara Sperling.

DILKE. Margaret Belcher (compiler), Mr. and Mrs. S. R. Belcher.

DUPEROW-RUTHILDA. Maurice L'hoir, Wayne Renaud, Guy Wapple (compiler).

EASTEND (29). Mike Gollop (compiler), Dale and Sheila Guthormson, Wayne Harris, Jane Jenkins, Rick Jerema, Sheila Lamont, Wayne Renaud, Guy Wapple.

EASTEND (24). Henri Lebastard.

EMMA LAKE. Bob Godwin (compiler), Julie Godwin, Kim Godwin, Angele McIlveen, Dave McIlveen, Kathy Meeres, Dan Paulson, Alan R. Smith.

ENDEAVOUR. Norman Harris.

FORT QU'APPELLE. E. M. Callin (compiler), Ethel Cockwill, B. De Vries, June Dick, Selma Hiebert, Ron and Esther Hooper, Joseph Kralkay, Lois Lamontagne, Shaun Rowell, Dorothy Williams.

FORT WALSH. Charles Harper, Wayne Harris, Bob Kreba, Sheila Lamont, Bob Luterbach, Wayne Renaud (compiler), Guy Wapple.

GARDINER DAM. Don Renaud, Wayne Renaud, Guy Wapple (compiler).

GLAMIS-WISETON. G. L. Jones (compiler), Chester Walker.

GRENFELL. Elizabeth Hubbard (compiler), John Hubbard.

HUMBOLDT. Ed Brockmeyer.

INDIAN HEAD. Cec and Betty Ashmore, Marg Barclay, Peter and Therese Barrett, Yvonne Brown, Margo Beaulieu, Ernie and Hazel Buglass, Cam, Elizabeth, Shane and MacKinley Davidson, Richard Escott, Joyce Gibson, Joan Halford, Gordon Howe, Jerome, Marc and Sheldon Longeau, Roy and Rose McLaughlin, John MacRobert, David Munro, Doris Pals, Lloyd and Muriel Peterson, Adam, Gertie, Joan and Lorne Scott (compiler), Doug Simpson, Fred, Mary and Ken Skinner, Andrea, Dennis, Donna, Orland and Ron Thompson, Denis Williamson, John and Reta Winter, Bob Young.

KELVINGTON. Chet Sloan, Dianne Sloan (compiler), Marguerite Sloan.

KENASTON. P. Lawrence Beckie.

LACADENA. Rod Sheasby.

LANGHAM. Vi and Vic Harper.

LEADER. Daisy D. Meyers.

LOON LAKE. Ronald Hooper.

LUSELAND. Kerry Finley (compiler), Kim Finley, Estelle Martfeld.

MACDOWALL. Dan Neves, John Shadick, Stan Shadick (compiler).

MOOSE JAW. Achille, Beatrice, Catherine and Jean-Pierre Chabot, Carl Ellis, Ruth Hilling, Pat Kern, John Kern, Leith Knight (compiler), Cy Knight, Doug Francis, Jean Thomson, Molly Ritchie, Wilma Young.

MOOSE MOUNTAIN PARK. Autumn Downey, Jim Hines (compiler).

PIERCE LAKE. John E. Christie.

PRIMROSE LAKE. John E. Christie.

PRINCE ALBERT. Wayne Harris (compiler), Sheila Lamont, Margaret Lewis, Hertha, Todd and Tracie McCorriston, Richard Miller.

PRINCE ALBERT NATIONAL PARK. Ray Breneman, Suzanne Henry (compiler), David Henry, Michael Jones, Merv Syroteuk, Bruce Wilson, Charlie Zinkan.

RAYMORE. Greta Harris, Wayne Harris (compiler), Sheila Lamont.

REGINA. Gary Anweiler, Margaret Belcher, John and Tom Beveridge, K. Costain, Kathleen Donauar, Robyn Donison, Mr. and Mrs. Murray Fines, Randall Fines, Valerie Harrison, Jim Hines (compiler), Jim and Shirley Jowsey, Ernest Kassian, Darlene

auk, Greg Kraetzig, Bob Kreba, Eric
nd Tony Lang, George Ledingham,
hristine MacDonald, Joe Roberts,
. Rumens, Bill Russon, Allan and
ianne Smith, Frank, Ian and May
witzer, Christopher and Janie
Vilhelm.

OUND LAKE. Doug Francis (com-
iler), Mr. and Mrs. Joe Grimeau.

ASKATOON. Mark Abley, Bernie
nderson, Juhachi Asai, Jim Bard-
vell, Bob Besant, Garth Besant, Jeff
esant, Joyce Besant, Ray Bisha,
ligel Caulkett, Ian Creurer, John Ed-
trom, Arthur, Edward, Glen, Hartley
nd Lawrence Fredeen, J. B. and M.
. Gollop, Bruce Hanbidge, John
lanbidge, Stuart Houston (compiler),
)ave, Don and Mary Houston, Tony
ohns, Regina McDowell, Don
lcRobbie, Jo McRobbie, Sean
lorrissey, Betty Mundy, Jim Mundy,
)an Neves, Lynn Oliphant, J. B.
)'Neil, Pat O'Neil, John Polson, Don
enaud, Wayne Renaud, Adam Sch-
nidt, John Shadick, Stan Shadick,
im Slimmon, Alan Smith, Edward
mith, Laura Smith, Tom Smith, Mary
trickland, Judy Taylor, Guy Wapple.

KULL CREEK. J. Bennetto (com-
iler), A. Drever, R. Flaig, D. Mann, M.
lann, R. Mann, T. Stevens.

OMME. David Black, Donald
looper, Leila Hooper, Ronald
looper (compiler).

PIRIT LAKE. Bill and Joyce Anaka
compiler).

PRING VALLEY. Flossie Bogdan
compiler), Larry and Nick Bogdan.

QUAW RAPIDS. Wayne Harris
compiler), Sheila Lamont, Wayne
enaud, Guy Wapple.

OGO. Phil and Jean Hern, Vic and
)lga Hilderman, Walter and Ethel
rupp, Cusie and Wanda May (com-
iler), Dick and Mary Smith, Howard
nd Donelda Wilson, Orville and
laine Wilson.

Bohemian Waxwings. *Wayne Harris*

WAUCHOPE. Dale Hjertaas (compiler), Paule Hjertaas.

WEBB-SWIFT CURRENT. Bob Peart (compiler), Dave Short.

WHITE BEAR. Sig Jordheim.

WHITEBEECH. Ida and Lindsay Wotherspoon (compiler).

WOLSELEY. J. Donald Hayward.

YORKTON. Margaret Bromley, Bernard and Penny Laarueld, Avery and Jean Matlock, Phil Pawluck (compiler), Mrs. Rosene Yanke.

Table 2. CHRISTMAS COUNT METHODS OF OBSERVATION, WEATHER AND TOTAL BIRDS.

	Car		Foot		Other		Feeder		Wind		Snow Cover	
	KM	HR	KM	HR	KM	HR	HR	Temp. C	Dir	KM/H	CM	Sky
Bangor							8	-30 to -27		48	30	overcast
Battleford - N. Battleford	65	3	2	½				-10 to -15		15	8-30	clear
Biggar	156	9	18½	10¾				-9 to -15	N	8-24	10-20	overcast, snow
Broadview	75.7	2	9.7	4				-21 to -8		9-20	10-25	cloudy, clearing
Canora	14	1	1	¾			1					clear
Dalmeny					SKIS 57	20		-20 to -15		5-7	2-40	cloudy, clearing
Dilke	81	2¾	3½	1½				-11 to -12	SSE	5-0	5-20	
Duperow - Ruthilda	140	5½	8½	2½				-14 to -20	NW	0-10	15-20	cloudy with snow, clearing
Eastend	123	14	20	11				-28 to -24		10-20	0-120	clear
Eastend	35	4	3	2½				-2 to -32		0-60	10-25	cloudy
Emma Lake	85	6	6	4			½	-25		10-25	20-25	cloudy
Endeavour			2	3				-25 to -12		2-5	30-40	moderate snow
Fort Qu'Appelle	220	7						-4		8	15	clear
Fort Walsh	55	6½	36	20				-20 to -25	N	35-45	60	overcast, blizzard
Gardiner Dam	141	3½	4	3¼				-16 to -24	SE	5-30	2-6	cloudy, snow in p.m.
Glamis-Wiseton	55	3			SKIS 2	¼		-14 to -8	W to NW	0-5	10-18	cloudy
Grenfell	19	½	3	1¼				-10		19	27½	overcast
Humboldt	10	½			SKIDOO 19 SKIS 9	2 2					20-30	
Indian Head	144	5	13	4			8	-11 to -6		5-20	25-30	cloudy
Kelvington	7	⅓					6	-8 to -12		light	21	heavy snow to overcast
Kenaston		1		2				-9		0	25½	cloudy, clearing
Lacadena	16	½	13	6				-2 to 0			1-2	clear
Langham							6	-20 to -25		0-10	2-5	clear, clouding
Leader	1	1	2	2				-10 to -18		0	30-40	cloudy
Loon Lake	30	1	3	1				-30		0	18	clear
Luseland	100	5	10	3				-28		5-10	15-20	clear
MacDowall	90	6	1	½				-8 to -11		4-6	7-10	cloudy, clearing
Moose Jaw	250	15	12	3				-10		10-15	7-15	clear
Moose Mt. Park	80	6	3	1				-26 to -31		0-20	0-50	mostly clear
Pierce Lake	32	2	8	3				-18 to -23		10	30-50	
Primrose Lake	24	2	6½	3				-30 to -23	NE	15-20	30-50	partly cloudy
Prince Albert	80	8	20	10			2	-22		4-10	10-30	mostly cloudy

Table 2. CHRISTMAS COUNT METHODS OF OBSERVATION, WEATHER AND TOTAL BIRDS.

	Car		Foot		Other		Feeder		Wind		Snow Cover	
	KM	HR	KM	HR	KM	HR	HR	Temp. °C	Dir	KM/H	CM	Sky
Prince Albert National Park	240	8	44	13				-25 to -14		2-3	20-30	clear
Raymore	80	7	10	5			2	-14 to -11	NW-W	10-20	15-30	overcast, light snow
Regina	790	37½	68	26½			4	-14 to -11	SSE	0-16	25-50	overcast light snow
Round Lake	58	6	1				3	-9 to 0		26-45	0-60	overcast
Saskatoon	406	40½	85	39	SKIING 14½	5	2	-16 to -14	E	7-15	5-10	overcast clearing
Somme	85	3	20	7			2	-20		0	30-36	clear
Spirit Lake	95	5	4	2½			1	-14 to -11		5-25	26	overcast
Spring Valley	48	2¼			SKIING 8	2½		-12 to -4		0	26-38	clear to cloudy and snowing
Squaw Rapids	54	9	18	13				-17 to -12		15-20	15-30	overcast, clearing
Togo							7 Stations					
Wauchope	29	2	12	3			3	-23	W	8	25-40	clear
Webb - Swift Current	142	3	2	1				-10 to -17		40-50	0-30	mostly clear some light snow
White Bear			5	2½				-28 to -30		0-3	10-60	clear
Whitebeech			2	1	SNOWMOBILE 3	½	3	-28 to -27		5-10	36-50	clear
Wolseley	27	1½	1	½				-10 to -15		8-10	25-30	clear
Yorkton	7	1½	1½	1				-19 to -21		18	10-26	cloudy
Skull Creek		8	6	16				-14 to -16		20	80-90	cloudy, clearing

Gray Partridge. *Lorne Scott*

Table 3. BIRDS RECORDED FROM MORE THAN ONE LOCALITY ON COUNT DAY AND IN COUNT PERIOD (+).

	Bangor Jan. 1	Battleford-North Battleford Dec. 26	Biggar Dec. 18	Broadview Dec. 20	Canora Dec. 26	Dalmeny Dec. 26	Dilke Dec. 24	Duperow-Ruthilda Dec. 19	Eastend Dec. 29	Eastend Dec. 24	Emma Lake Dec. 29	Endeavour Dec. 24	Fort Qu'Appelle Dec. 16
Canada Goose													
Mallard		1							1				30
Common Goldeneye													4
Common Merganser													
Goshawk									+1				
Golden Eagle							1		2	1			
Bald Eagle									1				+1
Prairie Falcon									1				
Merlin			3						1				
Spruce Grouse													
Ruffed Grouse	2			9					1				1
Sharp-Tailed Grouse	3		26	16	1	23	+4	57	2	+6	1	2	2
Ring-Necked Pheasant								1	32	+11			
Gray Partridge			8			+9	29	55	13	16			+1
Rock Dove		12	96	2	5	+10	1	59	68	6			25
Great Horned Owl				1	1	2		1	1			+1	4
Snowy Owl						1				2			
Great Gray Owl													
Short-Eared Owl			1		1				1	+1			
Common Flicker													
Pileated Woodpecker											+1		
Hairy Woodpecker	2				2	2			1		2		1
Downy Woodpecker	1		5		2	2		+1	1	+1	4	+1	4
Bl.-Bk. 3-T Woodpecker											1		
North. 3-T Woodpecker											1		
Horned Lark			7				30		569	5			
Gray Jay											3		
Blue Jay				1		2		1			3		2
Black-Billed Magpie	1	21	72	36	3	25	20	90	172	19	30	4	26
Common Raven					14			+2			115	25	
Black Cap. Chickadee	5	1	11	4	3	4		1	35		46	+2	21
Boreal Chickadee											18		
Wh-Breasted Nuthatch											4		4
Red-Breasted Nuthatch									6		3		
Brown Creeper													
American Robin			1							2			1
Gold-Cr. Kinglet			+3				3		3				
Bohemian Waxwing		25	66		26		10		37	30			100
Cedar Waxwing			+1										5
Northern Shrike													
Starling		26	55	6			+1	7	7	+6			2
House Sparrow	3	31	1317	55	350	41	194	484	500	60		2	140
Redwinged Blackbird									+1				1
Rusty Blackbird									+2				
Brewer's Blackbird									+3				
Evening Grosbeak		20	10							8	105	+4	+1
Pine Grosbeak	14	5	1		37	11					7	+4	
Gr.-Cr. Rosy Finch									28				
Hoary Redpoll			4						1				
Common Redpoll			545	+24		8		89	33		35		13
Pine Siskin													
Red Crossbill													
White-Winged Crossbill											200		
Dark-eyed Junco			1										
Tree Sparrow									1				
Snow Bunting			102	234		330	400	49	1218		4	125	30
Count Day Species	8	9	19	10	12	12	9	12	28	10	18	6	20
Count Period Species	8	9	21	11	12	14	11	14	32	15	19	11	23
Count Day Total	31	142	2331	364	445	451	688	894	2739	149	582	159	416

Table 3. BIRDS RECORDED FROM MORE THAN ONE LOCALITY ON COUNT DAY AND IN COUNT PERIOD (+).

	Fort Walsh Dec. 28	Gardiner Dam Dec. 23	Glamis-Wiseton Dec. 26	Grenfell Dec. 17	Humboldt Dec. 23	Indian Head Dec. 17	Kelvington Dec. 21	Kenaston Dec. 26	Lacadena Dec. 26	Langham Dec. 27	Leader Dec. 24	Loon Lake Dec. 29
Canada Goose												
Mallard		600				6						
Common Goldeneye		5				3						
Common Merganser		3										
Goshawk	2											
Golden Eagle	2sp									+1		
Bald Eagle						1						
Prairie Falcon									1			
Merlin												
Spruce Grouse												
Ruffed Grouse	6			+1	1	8						
Sharp-Tailed Grouse	8	20	1	3	18	150	6	+11	11	+6	1	1
Ring-Necked Pheasant	1	3				2			15	+2	3	
Gray Partridge	26	15	27		+5	94		56	3	+15		
Rock Dove	7	16	80			55		22	1			
Great Horned Owl		1	1		1	2			1			
Snowy Owl		1	3			2		1				
Great Gray Owl												1
Short-Eared Owl												
Common Flicker												
Pileated Woodpecker												
Hairy Woodpecker	4			+1		7	4			+1		1
Downy Woodpecker	5			+1		7	2				1	1
Bl.-Bk. 3-T Woodpecker												
North. 3-T Woodpecker	1											
Horned Lark	33	6				1		5				
Gray Jay												
Blue Jay		2				3	2					1
Black-Billed Magpie	126	40	4	+1	+1	91	8	13	32	4	7	1
Common Raven							4					5
Black Cap. Chickadee	68	5		1	+2	26	10	1		3	2	4
Boreal Chickadee												
Wh-Breasted Nuthatch						1						
Red-Breasted Nuthatch	10					1						
Brown Creeper	4											
American Robin	1	5				+7						
Gold-Cr. Kinglet	10											
Bohemian Waxwing		315		+10	40	320				8		
Cedar Waxwing												
Northern Shrike	1											
Starling		14		+15								
House Sparrow	32	38	100	20	15	1000		25		+6		2
Redwinged Blackbird	3											
Rusty Blackbird	4					1						
Brewer's Blackbird												
Evening Grosbeak		17		15		5	10			+1		+7
Pine Grosbeak	3	3		+4	22		6			12		
Gr.-Cr. Rosy Finch	1											
Hoary Redpoll												
Common Redpoll	72	75			1000	17				20		12
Pine Siskin								+1				
Red Crossbill	88											
White-Winged Crossbill	8											
Dark-eyed Junco												
Tree Sparrow												
Snow Bunting	254	73	130		+12	133	100	5		+15	25	+9
Count Day Species	29	22	8	4	7	24	10	8	7	5	6	10
Count Period Species	29	22	8	11	11	25	10	10	7	13	6	12
Count Day Total	782	1258	346	39	1097	1936	152	128	64	47	39	29

Table 3. BIRDS RECORDED FROM MORE THAN ONE LOCALITY ON COUNT DAY AND IN COUNT PERIOD (+).

	Luseland Dec. 29	MacDowall Dec. 16	Moose Jaw Dec. 26	Moose Mt Park Dec. 31	Pierce Lake Dec. 18	Primrose Lake Dec. 28	Prince Albert Dec. 26	Prince Albert National Park Dec. 19	Raymore Dec 19	Regina Dec. 26	Round Lake Dec 31	Saskatoon Dec. 26
Canada Goose										797		
Mallard										340		4
Common Goldeneye						1				1		63
Common Merganser						1						
Goshawk							+1					2
Golden Eagle												
Bald Eagle						1						
Prairie Falcon			1							1		
Merlin			2				+1			3		5
Spruce Grouse								1				
Ruffed Grouse					1		1	+2	1	2	1	4
Sharp-Tailed Grouse	9		3		+4		1		24	30		93
Ring-Necked Pheasant			10								2	12
Gray Partridge	8		19							169	25	6
Rock Dove	23	2	167				520		15	435		2020
Great Horned Owl		1	3	1			+1	1	4	2	+1	5
Snowy Owl	3		5							12	+1	2
Great Gray Owl								+1				
Short-Eared Owl										1		
Common Flicker										3		1
Pileated Woodpecker							1	1				
Hairy Woodpecker		3		9		1	+1	2	2	2	4	19
Downy Woodpecker		2	2	1		+1	3	+1	2	2	4	14
Bl.-Bk 3-T Woodpecker								+1				
North 3-T Woodpecker							1	+1				
Horned Lark	9											
Gray Jay		3					5	12				
Blue Jay		3		3			1	2			1	25
Black-Billed Magpie	10	37	41	9			54	3	17	67	6	308
Common Raven		11			7	3	52	14				
Black Cap. Chickadee	2	16	8	23	6	3	27	14	19	6	30	138
Boreal Chickadee		3					2	2				2
Wh-Breasted Nuthatch		1			1	1	+2			1	2	3
Red-Breasted Nuthatch							2			5		26
Brown Creeper							7			5		1
American Robin			10							4		197
Gold-Cr. Kinglet			2				2			1		6
Bohemian Waxwing	12	26	14				525		53	643	1	4106
Cedar Waxwing										6		4
Northern Shrike	1	1										
Starling	8	1	75				12			337		314
House Sparrow	6	50	377				310		165	2020	56	2447
Redwinged Blackbird												
Rusty Blackbird												2
Brewer's Blackbird												
Evening Grosbeak		25					391		+1		125	9
Pine Grosbeak		25					63	+1	1	1	1	124
Gr.-Cr. Rosy Finch												
Hoary Redpoll												
Common Redpoll	54			113	+6		10		85	22	50	290
Pine Siskin												+1
Red Crossbill		8										24
White-Winged Crossbill		13					2			39		35
Dark-eyed Junco			+1							1	+1	1
Tree Sparrow												1
Snow Bunting	79	15	160		350		4		220	20	+50	
Count Day Species	13	20	17	7	6	8	23	10	13	33	14	38
Count Period Species	13	20	18	7	9	9	28	16	14	33	18	39
Count Day Total	224	246	899	159	366	12	1996	52	605	4980	308	10316

Table 3. BIRDS RECORDED FROM MORE THAN ONE LOCALITY ON COUNT DAY AND IN COUNT PERIOD (+).

	Somme Dec. 27	Spirit Lake Dec. 25	Spring Valley Dec. 24	Squaw Rapids Dec. 17	Togo Jan. 1	Wauchope Dec. 23	Webb-Swift Current Dec. 21	White Bear Dec. 30	Whitebeech Dec. 31	Wolseley Dec. 23	Yorkton Dec 26	Skull Creek Dec 28
Canada Goose							+1					
Mallard				24								
Common Goldeneye				135								
Common Merganser				2								
Goshawk	1			3	1							
Golden Eagle			+1				+1	+2				+1
Bald Eagle				15								+1
Prairie Falcon								+1				+1
Merlin												
Spruce Grouse				1								
Ruffed Grouse	6	1		8	4	6				2		
Sharp-Tailed Grouse	+4	11	8		5	6	51	1	+1	8	10	18
Ring-Necked Pheasant								15				23
Gray Partridge	9	20	42		+8	3	12	35		+7	12	8
Rock Dove	+6		24			11	64	50				
Great Horned Owl	1	1	+1	1	1	2				+1	1	7
Snowy Owl			1		+1		+1			+1		+1
Great Gray Owl												
Short-Eared Owl							+1					
Common Flicker							+1					
Pileated Woodpecker					+1							
Hairy Woodpecker	7	8		7	3	2			2	3		2
Downy Woodpecker	1	9		2	2	1	+1	+1	3	1	1	3
Bl.-Bk. 3-T Woodpecker				2								
North. 3-T Woodpecker	3			2								
Horned Lark		+2	28				16	+5		2		186
Gray Jay	1			5					1			
Blue Jay	4	1		6	2							1
Black-Billed Magpie	16	26	7	11	2	13	14	29	+1	8	15	48
Common Raven	30	+1		60	2				2			
Black Cap. Chickadee	10	26		20	30	17	+1	+1	6	2		52
Boreal Chickadee				38	4							
Wh-Breasted Nuthatch		2			1							
Red-Breasted Nuthatch				23								
Brown Creeper												
American Robin							+1					+1
Gold-Cr. Kinglet												
Bohemian Waxwing	+2	13	+14		1			28			9	47
Cedar Waxwing												
Northern Shrike	+1			1								
Starling		2				4		3				
House Sparrow	68	276	280		58	310	23	100	+25	50	41	75
Redwinged Blackbird												
Rusty Blackbird			+1									1
Brewer's Blackbird										+1		
Evening Grosbeak	1	+20		2	322	15			15			
Pine Grosbeak	14	7		66	+6				+3	+3	+15	
Gr.-Cr. Rosy Finch												
Hoary Redpoll												
Common Redpoll	+2	55		63	4	8	+7			8	11	
Pine Siskin		+2										
Red Crossbill												
White-Winged Crossbill				93								
Dark-eyed Junco	1					1	+8					
Tree Sparrow						1						
Snow Bunting	26	2	1200	10012	+8	+2	900	+200		50	+8	3000
Count Day Species	17	16	8	27	16	15	8	8	6	10	8	14
Count Period Species	22	20	12	27	21	16	19	14	10	15	10	19
Count Day Total	198	460	1590	10608	442	401	1081	261	29	134	100	3471

1. BANGOR
2. BATTLEFORD-NORTH BATTLEFORD
3. BIGGAR
4. BROADVIEW
5. CANORA
6. DALMENY
7. DILKE
8. DUPEROW-RUTHILDA
9. EASTEND
10. EASTEND
11. EMMA LAKE
12. ENDEAVOUR
13. FORT QU'APPELLE
14. FORT WALSH
15. GARDINER DAM
16. GLAMIS-WISETON
17. GRENFELL
18. HUMBOLDT
19. INDIAN HEAD
20. KELVINGTON
21. KENASTON
22. LACADENA
23. LANGHAM
24. LEADER
25. LOON LAKE
26. LUSELAND
27. MACDOWALL
28. MOOSE JAW
29. MOOSE MOUNTAIN PARK
30. PIERCE LAKE
31. PRIMROSE LAKE
32. PRINCE ALBERT
33. PRINCE ALBERT NATIONAL PARK
34. RAYMORE
35. REGINA
36. ROUND LAKE
37. SASKATOON
38. SOMME
39. SPIRIT LAKE
40. SPRING VALLEY
41. SQUAW RAPIDS
42. TOGO
43. WAUCHOPE
44. WEBB-SWIFT CURRENT
45. WHITE BEAR
46. WHITEBEECH
47. WOLSELEY
48. YORKTON
49. SKULL CREEK

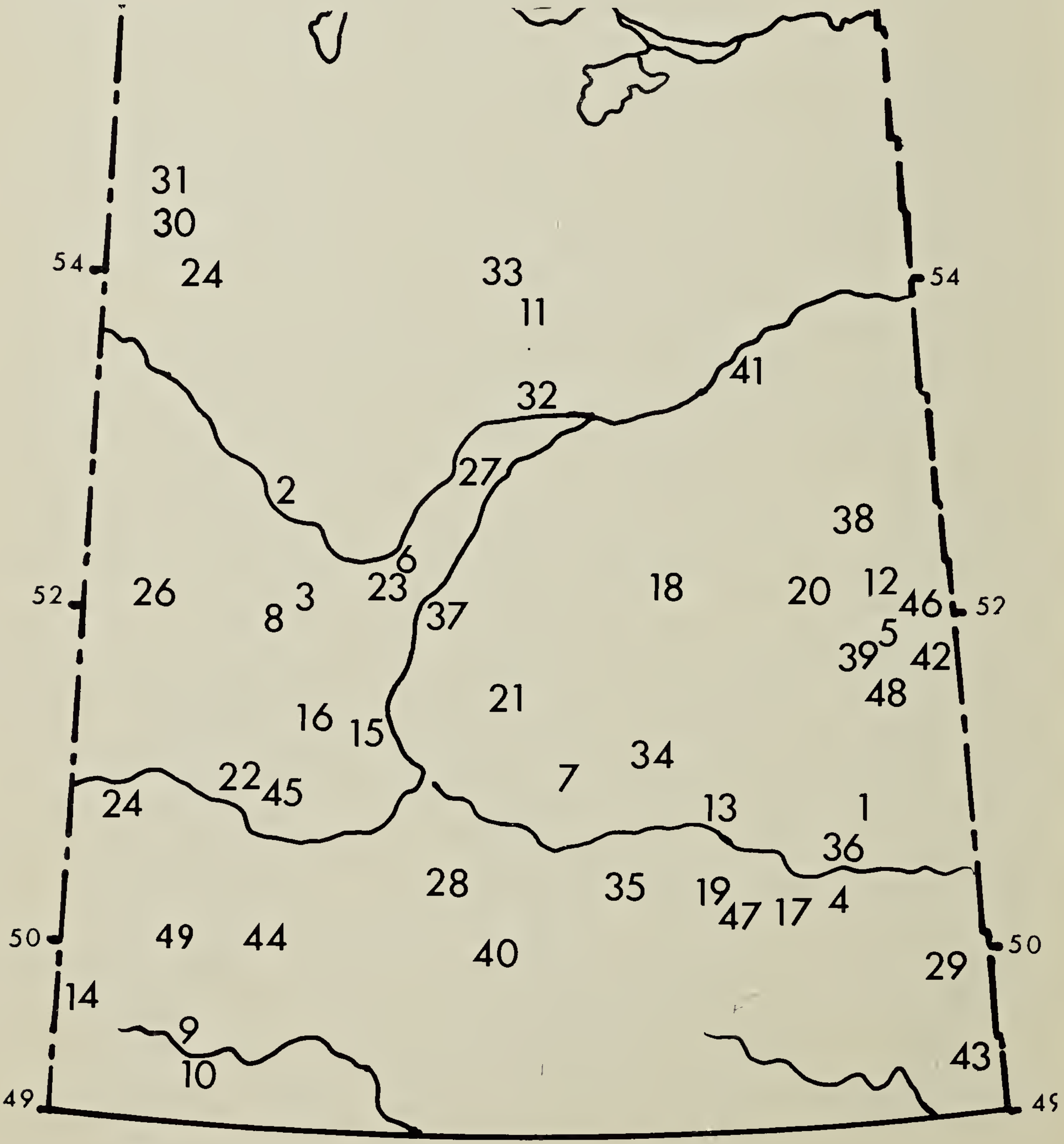


Table 4. SPECIES RECORDED FROM ONLY ONE LOCALITY

No.	*Species*	*Locality*	*Map No.*
1	Pintail	Gardiner Dam	15
3	Lesser Scaup	Squaw Rapids	41
1	Sharp-shinned Hawk	Saskatoon	37
1	Swainson's Hawk	Webb-Swift Current	44
1	Gyrfalcon	Fort Walsh	14
1	Willow Ptarmigan	Primrose Lake	31
+1	Common Snipe	Webb-Swift Current	44
1	Hawk Owl	Squaw Rapids	41
1	Long-eared Owl	Regina	35
1	Saw-whet Owl	Endeavour	12
1	Yellow-bellied Sapsucker	Saskatoon	37
1	Common Crow	Regina	35
+1	Varied Thrush	Pierce Lake	30
1	Townsend's Solitaire	Saskatoon	37
1	Yellow-rumped (Audubon's) Warbler	Fort Walsh	14
1	Dark-eyed (Oregon) Junco	Wauchope	43
3	Lapland Longspur	Eastend	9

NORTHWEST TERRITORIES CHRISTMAS BIRD COUNTS

FORT SMITH

Date: Dec. 26, 1978.

Weather: clear with patches of ice fog; temp. -35°C; calm; snow 25 cm.

Routes Covered: Fort Smith, west along Highway 5 to the Fox Holes Road intersection; south along the Pine Lake Road to Salt River; east along the Hay Camp Road to Fort Fitzgerald. 150 km in 3½ hours.

Birds seen: Goshawk, 1; Gyrfalcon, 1; Willow Ptarmigan, 3; Great Gray Owl, 1; Gray Jay, 3; Common Raven, 141; Boreal Chickadee, 1; Pine Grosbeak, 35; Redpoll sp. 30. 8 Species, 215 individuals. (Add: Evening Grosbeak, 8, Dec. 23).

Contributors: Ralph Checkley, Nancy and Ian Church, Denys Cook, Dan Graham (compiler), Grant Hogg, Martha Jalkotzy, Carl and Jan Lentowicz, Betty Montgrand, C. Schaefer, Ray Whaley. (Food and hot drink prepared by Linda Graham!)

YELLOWKNIFE

Date: Dec. 17, 1978.

Weather: temp. -32°C; wind SE 8 km/hr; clear.

Coverage: 73 km by car and 36 km on foot in 10.25 hours.

Birds seen: Spruce Grouse, 6; Willow Ptarmigan, 31; Gray Jay, 1; Common Raven, 234; Boreal Chickadee, 1; Starling, 2; House Sparrow, 29; Hoary Redpoll, 10; Redpoll sp. 128; Snow Bunting, 1. 10 species, 443 individuals.

Contributors: Jenny Clark, Judy Donaldson, George Gibson, Troy Gibson, Don Karasiuk, Cliff Matthews (compiler), Gail McCorrister, Dave Sutherland, Wendy Thompson.

KEEPING TRACK OF SASKATCHEWAN'S BIRDS*

A. J. ERSKINE, Canadian Wildlife Service, Sackville, New Brunswick, and J. B. GOLLOP, Canadian Wildlife Service, Saskatoon, Saskatchewan.

Are their summer populations increasing or decreasing? This article will not answer that question — because we don't have enough information, yet. But we are trying to find out and we are looking for bird watchers who would like to help by putting in about six hours on a bird count one morning a year in June.

Co-operative bird counting schemes are one way to get around the impossibility of being in more than one place at a time, when you need to know what is happening in the bird world over a wide area. The Christmas Bird Count (CBC) is the best known endeavour of this kind. Less well known, but no less enjoyable to those of us who take part, is the co-operative Breeding Bird Survey (BBS), which seeks to measure trends in summer bird numbers. In 1977 Christmas Bird Counts were done in 68 localities in Saskatchewan; Breeding Bird Surveys in 21.

The BBS was started in the U.S.A. in 1965, and has been operating in Saskatchewan since 1968.[1] It is a much more standardized count than the CBC and, consequently, the figures that emerge from it are more comparable from place to place and from year to year. One of the most important things about these surveys is that they are rather uniformly distributed across the country, one in each degree block of latitude and longitude. Figure 1 shows the 48 routes established in southern Saskatchewan. The 18 routes looking for bird counters are circled.

Observers have to be able to identify at least the common birds readily by song as well as by sight. Most people prefer to go out in pairs, although only one person makes the observations. The second person times the stops, records the data on forms, drives the car, or just goes along for the ride — and frequently tells the primary observer afterwards about all the things he or she missed at the last stop. You can't stop "one-up-man-ship"! The assistant can also act as navigator for locating stops or help to push the car out of mudholes. Most of the routes are on grid roads or better, but even these get muddy.

A route is done once in June, starting one-half hour before sunrise, on any date suitable to the observer with good weather. The starting points and routes have been determined in advance, and the same routes are done each year, preferably by the same observer, around the same date, and under comparable conditions (light winds, no rain). The observer goes to the starting point, counts all the birds seen within a quarter mile and all birds heard during 3 minutes from the prescribed starting time, then drives 0.5 miles (0.8 km) to the next stop and counts again for 3 minutes, and so on to the next stop another half-mile along the way, continuing until 50 stops are completed. This usually takes about 4 to 4.5 hours, and some people take a "seventh-inning stretch" — with

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*Alberta and Manitoba bird watchers, please see note at end of this article.

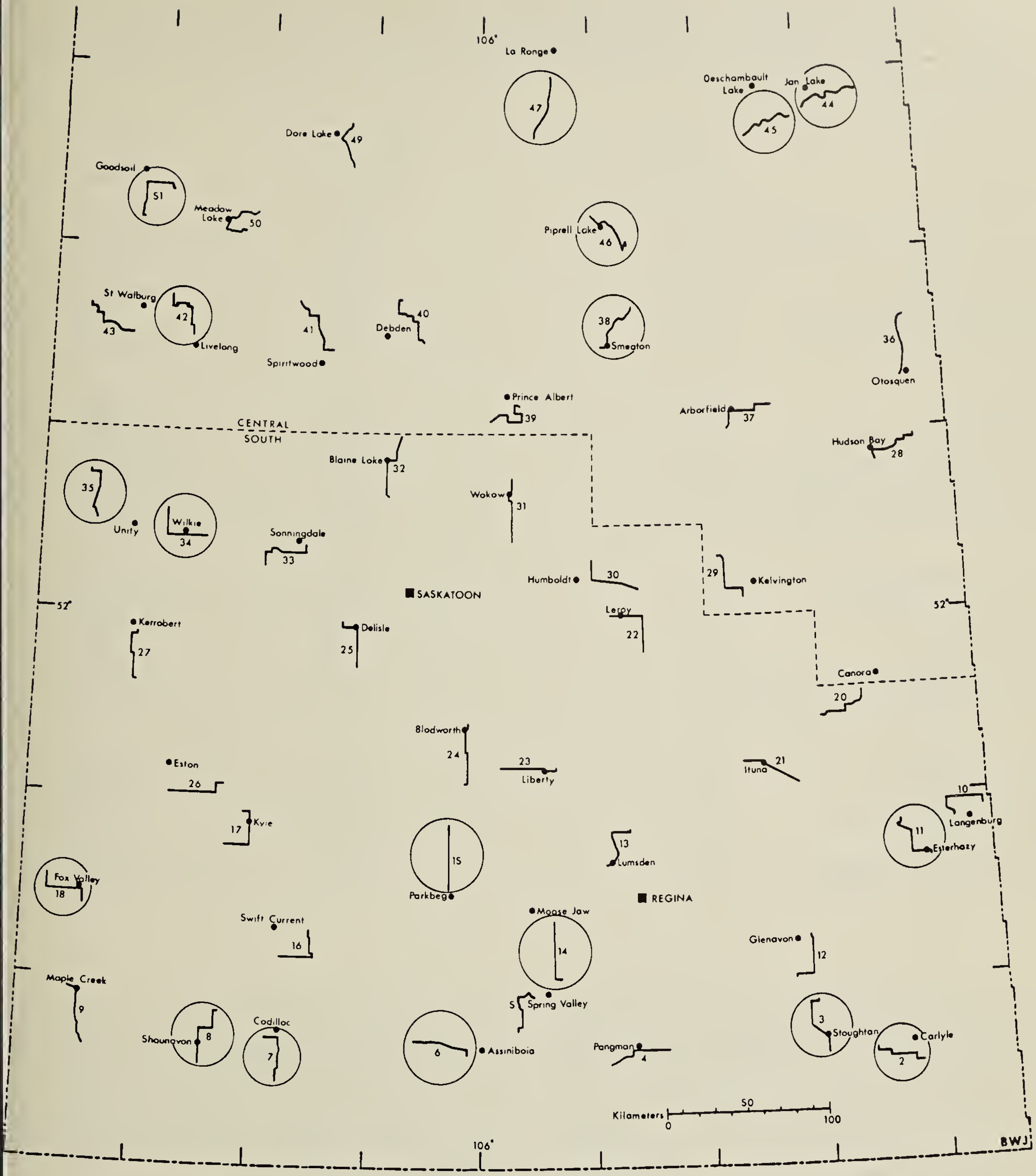


Figure 1: Breeding Bird Survey Routes in Saskatchewan Circled routes are available for new co-operators.

coffee — partway through in order to keep up their concentration for the entire route. The first hour is the most demanding: in the dark before sunrise with the full tumult of the dawn chorus assailing your ears. But there is a real sense of achievement when you finish. And to most people there is a surprise later on when you add up the results and realize just how many birds you recorded in that relatively short time. Even a bald prairie or northern forest route may show 40 species and 500 birds, while a good parkland route with lots of sloughs may turn up over 60 species and 1200 or more birds. People who are not exhausted by the end and want to continue have the start of a big day's list already by 9 a.m.

Table 1: The 20 species recorded in greatest numbers in the Breeding Bird Survey, southern Prairie Provinces, 1977; the mean number of each per route; and the percentage of routes on which they were found. Twenty-six routes were surveyed, with a mean of 964 birds noted per route.

Species	**Mean no. per route**	**% of 26 routes**
Red-winged Blackbird	138.9	100
Horned Lark	86.2	100
House Sparrow	73.3	100
Western Meadowlark	55.6	100
Common Crow	47.2	100
Mallard	43.1	96
Brewer's Blackbird	32.9	100
Clay-coloured Sparrow	31.3	100
Yellow-headed Blackbird	27.5	81
Brown-headed Cowbird	26.7	100
Savannah Sparrow	20.8	96
Vesper Sparrow	18.3	92
Killdeer	15.8	100
Barn Swallow	15.2	100
Chestnut-collared Longspur	15.1	27
Mourning Dove	14.5	88
House Wren	14.0	81
Blue-winged Teal	13.7	77
Cliff Swallow	12.8	23
Black-billed Magpie	12.1	88

Although the BBS provides a long list in a short time, most of the birds belong to a few species. In the southern Prairies as a whole, birds of the 20 species recorded in greatest numbers make up about 70 percent of all birds detected (Tables 1 and 2).[2] Most of the other 100-odd species noted have fewer than 10 individuals each on any route.

One example of the trends shown by BBS data thus far is the status of the Red-winged Blackbird. Both in the southern Prairies and in the more northern parkland and forested areas of these provinces, Redwings show a sustained upward trend, similar to that in eastern Canada where the species is becoming a major pest in corn-growing areas.[1] The BBS data also show things like the highly erratic occurrences of species such as Short-eared Owls and Lark Buntings. At least 7 years' data are necessary before trends start to become convincing.

We would like to hear from anyone interested in surveying a vacant route during June, 1979. Please write or phone Bernie Gollop (Canadian Wildlife Service, 115 Perimeter Road, Saskatoon, Saskatchewan, S7N 0X4; phone 665-4087) for more details, or contact one of the other regular observers in your area: Bill Anaka, Marg Belcher, Wayne Harris, Don Hayward, Stuart Houston, Dale Hjertaas, Brian Irving, Ken Johnson, Jim Jowsey, Pat Kern, Sheila Lamont, George Ledingham, Moe Mareschal,

Table 2: The 20 species recorded in greatest numbers in the Breeding Bird Survey, central Prairie Provinces region, 1977; the mean number of each per route; and the percentage of routes on which they were found. Twenty-eight routes were surveyed, with a mean of 737 birds noted per route.

Species	**Mean no. per route**	**% of 28 routes**
Red-winged Blackbird	70.8	96
Common Crow	40.3	93
Clay-coloured Sparrow	31.2	89
Mallard	30.2	64
Brewer's Blackbird	29.9	79
Song Sparrow	26.0	86
Savannah Sparrow	22.8	68
House Sparrow	21.5	75
American Robin	21.1	100
Yellow-headed Blackbird	20.6	46
Red-eyed Vireo	17.6	89
Brown-headed Cowbird	16.4	89
Starling	15.4	79
Barn Swallow	14.5	89
Franklin's Gull	14.0	46
Black-billed Magpie	13.6	79
Cliff Swallow	12.7	43
House Wren	11.9	86
Black Tern	10.8	57
Western Meadowlark	9.9	57

Bob Peart, Dave Robinson, Frank Roy and John Shadick. We would like to thank these faithful co-operators, many of whom have done their surveys for 5 or more years.

Alberta and Manitoba Bird Watchers

This article was prepared primarily for Saskatchewan readers. Interested persons in other provinces can obtain information on BBS routes needing coverage from:

Alberta: Jack Park, 10236 - 70 Street, Edmonton T6A 2T4.

Manitoba: Herb Copland, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg R3T 2N2.

[1] ERSKINE, A. J. 1978. The first ten years of the co-operative Breeding Bird Survey in Canada. Canadian Wildl. Serv. Res. Ser. No. 42. 59 pp.

[2] FINNEY, G. H., K. E. FREEMARK and A. J. ERSKINE. 1978. The co-operative Breeding Bird Survey in Canada. Canadian Wildl. Serv. Progress Note 84. 21 pp.

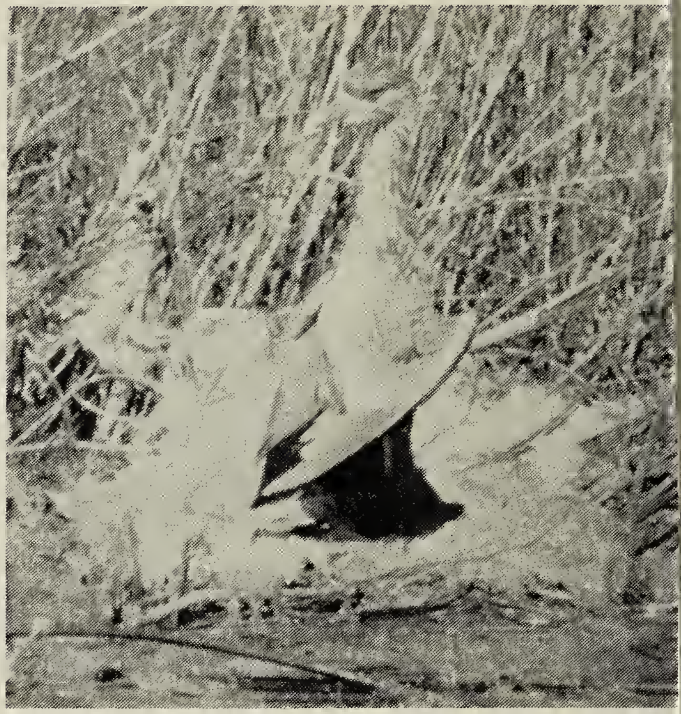
YELLOW-CROWNED NIGHT HERON IN MANITOBA, WITH A NOTE ON SUNBATHING

RICHARD W. KNAPTON, 337-99 Dalhousie Drive, Winnipeg, Manitoba R3T 3M2.

On 16 August 1978, Lorence Gesell, a government employee from Teulon, told Brian Knudsen and me of an unusual heron along Wavy Creek, Oak Hammock Marsh Wildlife Management Area, Manitoba. We located this bird, an immature Yellow-crowned Night Heron, at noon along the creek, photographed it, and observed it for about 20 minutes. During this time, it foraged for about 5 minutes, without catching any prey, and then sunbathed by directly facing the sun, opening its wings halfway and letting them droop in front of its legs (Fig. 1). It held this pose without moving for several minutes. It flew after it was disturbed, clearly showing the long tarsus and feet extending beyond the tail. The bird alighted close to an immature Black-crowned Night Heron, affording a direct comparison of such distinguishing features as its grayer plumage, more erect stance, and thicker, shorter bill. It remained along the creek until 9 September 1978, and was seen by many observers.

It is of interest that this individual, a vagrant north of its usual range, should engage in sunbathing. This behavior has not been reported previously in Yellow-crowned Night Herons.[6]

This record constitutes the eighth time that Yellow-crowned Night Herons have been reported in Manitoba. The first, an adult, was found dead at St. Francis Xavier on 7 May 1959 (specimen 1.2-2386, Manitoba Museum of Man and Nature).[1] Subsequent sightings have been an adult photographed at Assiniboine Park, Winnipeg, on 15 May 1963,[7] one at Delta on 9 June 1963 and for a few days thereafter,[8] an adult along Parks Creek, St. Andrews Bog (now Oak Hammock Marsh) on 22 May 1965,[8] an adult along the La Salle River, La Barriere Park, St. Norbert, on 14 June 1977,[4] and three more records at Oak Hammock Marsh, an adult on 28 July 1977,[5] an immature on 24 August 1977,[2] and an adult from 14 to 17 May 1978.[3]



Yellow-crowned Night Heron sunbathing.
Richard W. Knapton

I thank H. W. R. Copland and R. F. Koes for information on records.

[1]GODFREY, W. E. 1966. The birds of Canada. Nat. Mus. Canada Bull. 203. 428 pp.

[2]HORCH, P. 1977. Bull. Manitoba Natur. Soc. 1(2):6-7.

[3]KOES, R. F. Personal communication.

[4]KYLE, W. D. Personal communication.

[5]LINDSAY, A. Personal communication.

[6]MEYERRIECKS, A. J. 1960. Comparative breeding behavior of four species of North American herons. Publ. Nuttall Ornithol. Club 2. 158 pp.

[7]MOSSOP, H. 1963. Southern heron in Manitoba. Chickadee Notes 436. Winnipeg Free Press, Winnipeg. May 25, 1963.

[8]MOSSOP, H. 1965. Four uncommon visitors. Chickadee Notes 544. Winnipeg Free Press, Winnipeg. June 19, 1965.

FIRST RECORD OF KING EIDER NESTING IN MANITOBA

KENNETH F. ABRAHAM and FRED COOKE, Department of Biology, Queen's University, Kingston, Ontario, K7L 3N6.

The King Eider nests extensively in he North American arctic north of 60°N latitude and as far south as the Belcher Islands, N.W.T., and Cape Henrietta Maria, Ontario. No nesting records exist for Manitoba.[2] [4] Regular nesting along the Hudson Bay coast of Manitoba would complete the rather disjunct nature of the breeding distribution in this southernmost part of the species' ange. Jehl and Smith suggested that a few pairs might be found nesting in he Cape Churchill region of Manitoba, however Cooke *et al.* isted the King Eider as a rare migrant in the tundra area of Cape Churchill and La Pérouse Bay.[2] [1]

A female King Eider was found on 30 June 1977 on a nest at La Pérouse Bay, Manitoba (58°45′N, 94°30′W) in a colony of Common Eiders. The nest was located 50 cm above the level of he Mast River in fairly dense cover of *Salix planifolia* and *Betula glandulosa.* The nests of four Common Eiders and one Lesser Snow Goose were within 4 m. The King Eider nest contained five King Eider eggs and one Common Eider egg and was visited daily until all six ducklings were hatched (10 July). Photographs of the female and nest were taken and the female was caught and banded. There is little doubt that this female was mated to a King Eider male as one was seen on 16 and 18 June and a pair was seen on 12 and 17 June in the immediate vicinity of the nest. Furthermore, the egg dimensions agree very closely with those given by Palmer for King Eiders (mean of our 5-egg clutch: length 64.4 ± 1.9 mm; width 42.5 ± 0.1 mm).[3] The Common Eider egg in the nest was quite likely the result of parasitic egg laying by that species (in 1976 and 1977 Common Eider eggs were also found in Snow Goose nests). Although the parasitic egg hatched, it was the last to do so and the duckling was still damp and lethargic when the King Eiders were fluffy and active in and around the nest site.

Although King Eiders are not common at La Pérouse Bay, sightings have been made each summer since 1975. Additionally, several sightings were made near Cape Churchill in June 1977 and a male King Eider in the vicinity of an eider nest (species unknown) joined the female after she was flushed (A. Didiuk, pers comm). King Eiders nesting in such low numbers could easily be overlooked, especially if observers were present after the males had departed for their moult, and/or if the nest were located amongst many nests of Common Eider as this one was. If such regular nesting is occurring, habitat competition with the abundant, earlie nesting Common Eider (and perhaps the several nesting species of dabbling ducks) may prevent King Eiders from being more numerous.

[1] COOKE, F., R. K. ROSS, R. K. SCHMIDT and A. J. PAKULAK. 1975. Birds of the tundra biome at Cape Churchill an La Pérouse Bay. Canadian Field-Naturalist 89(4):413-422.

[2] JEHL, J. R. and B. A. SMITH. 1970. Birds of the Churchill Region, Manitoba Manitoba Mus. of Man and Nature Winnipeg, Spec. Publ. 1. 87 pp.

[3] PALMER, R. S. 1976. Handbook of North American birds. Volume 3. Yale University Press, New Haven. 560 pp.

[4] SALT, W. R. and J. R. SALT. 1976. The birds of Alberta. Hurtig Publishers, Edmonton. 498 pp.

Clark's Nutcracker. *Gary W. Seib*

1976 IRRUPTION OF CLARK'S NUTCRACKER IN CYPRESS HILLS, ALBERTA

ROBERT M. FISHER, 3719 Centre A Street, N.E., Calgary, Alberta, T2E 3A5.

On 18 August 1976 at 1600 hrs., park naturalists Doug Leriger and the author identified a Clark's Nutcracker in Cypress Hills Provincial Park, Alberta. The bird was sitting on top of a 15-m lodgepole pine *Pinus contorta var. latifolia* near Horseshoe Canyon (Lat. 41°38′ Long. 110°18′) at an elevation of 1430 m. Groups of 3-6 birds were observed almost daily in the area for the next week. The nutcrackers fed exclusively on grasshoppers during the 2 hours we observed them even though pine cones were available.

On 25 August 1976, at 1535 hrs., Doug Leriger observed a flock of 30 nutcrackers flying in the same area as the previous sighting. The birds flew just above the tree tops and disappeared over a hill, never to be seen as a flock again. Several photographs were taken of individual birds. The observations have been placed in the Alberta Ornithological Committee Active File as a substantiated record (Dr. J. Salt pers. comm. 1978).

Clark's Nutcracker is a permanent resident of the subalpine forests of the Rocky Mountains.[3] Every autumn and winter individuals descend to the coniferous and mixed wood forests of the Canadian Zone of Alberta and, in autumn and winter of certain years, single individuals or flocks disperse to lower elevations many kilometers from the mountain forests.[2] Although single birds have been recorded from Ravenscrag in the Saskatchewan Cypress Hills, the above observation is the first published record for Cypress Hills, Alberta.[4]

The significant aspect of the observation is the unusual number of individuals involved. A search through the literature indicated the vast majority of extralimital occurrences of Clark's Nutcracker in Canada are of single individuals or groups of 2-5. The large number of individuals in Cypress Hills, Alberta, should be considered an irruption. The mysterious aspect of the observation is where did the birds go after the last sighting on 4 September? No extralimital occurrences were reported in Saskatchewan or Montana. However, flocks of 30 and 20 nutcrackers were recorded in the Porcupine Hills, 300 km west of Cypress Hills, on 25 September 1976.[1]

If anyone has unpublished observations of Clark's Nutcracker outside its normal range, the author would be glad to receive them.

[1] BUTOT, R. 1977. Natural history observations: birds. Calgary Field Naturalist 8:181-188.

[2] SADLER, T. S. and M. T. MYRES. 1976. Alberta Birds, 1961-1970, with particular reference to migration. Prov. Mus. Alta., Nat. Hist. Sect. Occasional Paper No. 1. Alberta Culture, Historical Research Division. 292 pp.

[3] SALT, W. R. and J. R. SALT. 1976. The birds of Alberta. Hurtig Publ., Edmonton. 495 pp.

[4] SEALY, S. G. 1971. The occurrences of some western birds in Saskatchewan. Blue Jay 29:184-196.

EIGHTEENTH ANNUAL NESTBOX REPORT FROM BRANDON, MANITOBA

MRS. JOHN LANE, 1701 Lorne Avenue, Brandon; MISS MAMIE McCOWAN, 1415 Eighth Street, Brandon and MRS. R. H. PATMORE, 1261 Thirteenth Street, Brandon, Manitoba.

"The Friends of the Bluebirds" were busy again in 1978. As usual, two meetings were held in the home of Mrs. John Lane, the co-ordinator. At the March meeting the "Friends" had the opportunity to update their nestlines on topographical maps, to take a supply of nest boxes, where needed, and to receive forms for recording their observations for 1978. Results and experiences were discussed at a fall meeting. Reports were brought to this meeting or sent in to Mrs. Lane. The records submitted were used in compiling the following report.

In 1978, 90 new boxes were set out, bringing the total to 4840, and a number of old boxes were rebuilt or replaced. As in 1977, the stock of nest boxes and extra tops was plentiful at all times due to the excellent work of Mr. W. Forsyth and Mr. John Plum.

The Eastern Bluebird population was down in 1978. In the Camp Hughes area, where she monitors 140 nest boxes, Mrs. Barbara Robinson reported only five nestings of Eastern Bluebirds and says, "I feel sure the drop in Eastern Bluebird nestings must be attributed to the past two very cold winters experienced in their wintering area in the south-eastern states where considerable mortality resulted."

Mrs. Robinson reported that on 30 May, nest box No. 482 was occupied by Mountain Bluebirds with 8 eggs.

Her report also states that House Sparrows were down from 13 nestings in 1977 to only 2 in 1978, which she attributes to her moving the nest boxes lower on the posts. House Wrens, however, took over most of these same boxes and occupied 8 of them compared with only 3 House Wren nestings in 1977.

Mr. Jim Spear, Russell, Manitoba, also reported House Wren nestings are increasing, showing a count of 6 nestings in 1978 but only 2 in 1977.

Mr. Spear tends extensive nestlines and besides his specific records he makes these general comments. "It was a good year and very little sparrow trouble. Had more wrens, by the way. An interesting note about nest No. 4481 which started with a Mountain Bluebird as occupant with one egg. Then a House Sparrow took over and had 5 eggs with the Mountain Bluebird egg. I left them and the sparrow hatched the bluebird egg and the bluebird left the nest with the sparrows. There were no Eastern this year but the Mountain bluebirds were good. The all over average per nest fully feathered would be 5."

A good example that moving entire lines of previously House-Sparrow-infested nest boxes to a new area brings good results, was proved by Cliff Findlay's (Shoal Lake) experiment with 29 such boxes moved to St. Lazare community pasture area in 1977. In 1978 he had 24 nestings of

Friends of the Bluebirds" May Tucker and Betty Shankland repairing a house in the eleau-Oak Lake area.
The Farm Paper

ountain Bluebirds, 15 of Tree wallows and only one House parrow.

In the Lauder, Grande-Clairiere rea, Alice and Perry Hopkins reported no black flies in 1978. Excellent results with Mountain Bluebird nestings and of special interest were two broods of Eastern Bluebirds in nest No. 352. They found the first

Table 1. OCCUPANCY IN NEST BOXES 1978

Occupant	Number of Nestings
Mountain Bluebird	552
Eastern Bluebird	10
Tree Swallow	355
House Sparrow	104
Starling	4
House Wren	47
Mice	15
Squirrel	4
Chipmunk	1

nesting with 6 young on 22 May. On 2 June young had left the nest. On 25 June there were 5 Eastern Bluebird eggs and 9 July there were 5 young. By 28 July they had left the nest. The Hopkins monitored 105 boxes and visited them 5 times between 22 May and 16 August, when they cleaned them all.

1978 saw the Brandon Junior Birders active again. Mrs. Lane and four Juniors monitored the Brandon-Carberry nestline. Also, with Mr. Ken James as volunteer driver, Dave Randall and two Juniors spent valuable time in late July and early August in maintenance of the Kenton, Hamiota and Miniota lines. The total of 81 boxes had not been attended since 1975. Most of these nest boxes were filled to the top. However, one Eastern Bluebird and 7 Mountain Bluebirds were found as occupants with young. All nest boxes are now in readiness for 1979.

Mamie and Helen McCowan, who check a nestline in the Kemnay-Beresford area, wonder: "Do wrens drive out bluebirds and Tree Swallows?" They report a total of 4 House Wren nestings. Nest box No. 1435 was occupied by Mountain Bluebirds with 5 eggs on 16 June; on 3 July the box was filled with a House Wren's twig nest. and No. 1530 was occupied by a Tree Swallow's nest with one egg on 21 June, and on 7 July contained a House Wren's nest with one egg.

This report has been made possible through the work of "The Friends of the Bluebirds" from Boissevain — Mr. and Mrs. W. Moncur; Carberry — Mr. and Mrs. Bob Anderson and family; Glenboro — Mr. Peter Sawatzky; Hartney — Mr. and Mrs. Perry Hopkins; Headingly — Mr. and Mrs. Carl Gompf and family; Killarney — Mr. and Mrs. Barry Danard, Mr. Lloyd Powell, Ruth Goerzen; Miami — Mr. and Mrs. Dale Robinson; Neepawa — Mrs. Fred Murray, Don, Ken, Mac and Mary Murray, Mr. Ed Sage, Mr. and Mrs. W. G. Moger; Newdale — Mr. and Mrs. Roy Everitt; Oak Lake — Mr. and Mrs. C. Penner and family; Pratt — Mr. and Mrs. Les North; Russell — Mr. and Mrs. Jim Spear; Shoal Lake — Mr. Cliff Findlay; Souris — Mr. and Mrs. Art Michie; Wawanesa — Mr. and Mrs. Ed. Robinson, Mr. Lloyd Paulson; Brandon — Mrs. Barbara Robinson, Dick and Hazel Patmore, Daisy and Muriel Patmore, Margaret, Helen and Mamie McCowan, Betty Shankland, May Tucker, John and Marion Robinson, Ken James, Dave Randall, Ken Leslie, Mr. W. Forsyth, Mr. John Plum, Steven McFarlane, Martin McFarlane, Ken Burton, David Voorhis, Frank Brammall, Esther Brammall, Mrs. John Lane.

CALGARY BLUEBIRD TRAIL — 1978

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During March of 1978, the 400 esting boxes were again cleaned ut, sprayed with a 10% creolin olution, and repaired or replaced, as equired, in preparation for the upoming nesting season. Each box was checked and the contents reorded three times between third week in May to third week in July.

Of the 400 houses, 39 were vanalized before nesting began, and 11 were unoccupied on all visits, eaving 350 boxes used by birds. Exluding the 39 houses vandalized efore nesting commenced, 96.9% of he available nesting boxes were ocupied. There were 392 bird nests, 1 Red Squirrel nest, and 4 Deer Mouse ests in the 350 occupied boxes.

Table 1 analyzes the nesting sucess and losses for 1978. The verage clutch size for Mountain Bluebirds was 5.26, and for Tree Swallows 5.46. In 26 nest boxes, there were two or more broods by the same species — 20 were House Sparrows, and 6 were Mountain Bluebirds. Different species nested in the same box 16 times, as follows: sparrow then swallow, 7; sparrow then bluebird, 1; bluebird then swallow, 8.

The total losses for all species from egg-laying to young leaving the nest were 460 (22.5%) of which 287 (14%) were House Sparrow losses due to destruction by the authors. These figures show a drastic reduction in losses as compared to 1977, where losses from the egg-laying stage to young leaving the nest totalled 930 (46.7%). Two major factors contributing to the high productivity of 1978 as compared to 1977 are less vandalism and less interspecific competition, as illustrated by the following points: (1) The number of boxes vandalized before nesting

able 1. SUMMARY OF NESTING SUCCESS BY SPECIES, CALGARY BLUEBIRD TRAIL — 1978. (Numbers in parentheses are losses from the revious stage).

pecies	Nests	Eggs laid	Eggs hatched	Young fledged	% of eggs producing fledged young
ountain Bluebird	84	442	414(28)	410(4)	92.8%
Tree Swallow	241	1317	1189(128)	1176(13)	89.3%
ouse Sparrow	65	287	54(233)*	0(54)*	—
ouse Wren	2	0	0(0)	0(0)	—
OTALS	392	2046	1657(389)	1586(71)	77.5%

Destroyed by authors.

Tree Swallow at nesting box. *John Lane*

began was reduced from 43 to 39; (2) The number of boxes vandalized after nesting began decreased from 15 to 0; (3) The number of House Sparrow nests decreased by 51 (44%) in 1978; (4) The 65 House Sparrow nests were concentrated in 45 boxes; and (5) The number of boxes used by more than one species during the nesting season decreased from 60 to 16.

SNOWY EGRET AT CROOKED LAKE, SASKATCHEWAN

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Over the past five years people in he Crooked Lake area have reported egrets to me along the Qu'Appelle River near Sunset Beach resort. However, I have never followed up hese reports until this year.

On 5 May 1978, Milton Criddle of Broadview told me that he had seen an egret on the Qu'Appelle. At 0900 on 7 May, George Anderson and I were travelling along Highway No. 47 when we spotted an egret near he Qu'Appelle River approximately .0 km east of Sunset Beach on Crooked Lake. We walked down to he river to get a better look and to ry to photograph the bird. We lushed it several times, getting good iews through 8x40 binoculars and everal pictures with a 35mm camera and telephoto lens. It was not until he bird flew that I was satisfied that his was a Snowy Egret.

The white body, black bill and legs, ellow feet and closed "S" of the eck when flying were the identifying eatures.[3] We then canoed down the Qu'Appelle to try getting closer to he egret and take more pictures. By lowly drifting with the current we were able to get within 50 m of the bird getting excellent views.

There have been a few other ightings of the Snowy Egret in Saskatchewan, but to my knowledge o photographs were obtained. oyce Gunn saw a Snowy Egret at Spirit Lake, 23-29 May 1956.[1] Mr. E. ox and Mr. A. Swanston saw Snowy Egrets east of Craven on 9 July 956.[5] Wayne Weber saw a Snowy Egret on 19 June 1970 at the Cypress Lake dam, south of Maple Creek, Saskatchewan.[5] On 15 May 1977 and 3-4 June 1978, J. B. Gollop and others studied single adults near Saskatoon.[2] [4]

[1] ANAKA, W. 1956. The Snowy Egret. Blue Jay 14:89-90.

[2] O'NEIL, D. P. 1978. Saskatoon birds, May 30-July 26, 1978. Saskatoon Field Notes 7(2):1-10.

[3] ROBBINS, C. S., B. BRUUN and H. S. ZIM. 1966. Birds of North America. Golden Press, New York.

[4] SERR, E. M. 1977. Northern Great Plains Region, American Birds 31:1013-1016.

[5] WEBER, W. C. 1971. Sight record of a Snowy Egret at Cypress Lake, Saskatchewan. Blue Jay 29:134-135.

FURTHER NOTES ON THE ARRIVAL OF THE HOUSE SPARROW

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My article on the spread of the House Sparrow[2] overlooked two important early reports, from Carberry, Manitoba and Carnduff, Saskatchewan.

Ernest Thompson Seton[3] reported that the House Sparrow "first appeared at Carberry in 1892, but was not found in numbers until 1894." This antedates Macoun's 1894 Winnipeg report by two years. By early 1909, Seton said this new arrival was "found in all the settled portions of Manitoba, and at every farmhouse and in all the towns of the North-west as far as Athabaska Landing, Alberta."

In his history of Saskatchewan, John Hawkes had the following account: "We cannot say when the pugnacious and voracious English sparrow first made his appearance in the Territories. We first saw him in May, 1900. We were sitting outside the hotel at Carnduff on the American boundary, and opposite were four grain elevators. Noticing some birds I said to a fellow loafer, 'Those look to me like English sparrows.' 'They are,' he said, 'they came here last fall and took possession of that elevator, and turned the grey birds out. They go into all the other elevators, but they won't let any grey bird come into theirs. They go from town to town but I think this is as far as they have got on this line yet'."[1]

[1] HAWKES, J. 1924. Wildlife (Vol. 2, Chapter 91, pp. 899-907) in: The Story of Saskatchewan and its People. S. J. Clark Publishing Co., Regina.

[2] HOUSTON, C. S. 1978. Arrival of the House Sparrow on the prairies. Blue Jay 36:99-102.

[3] SETON, E.T. 1909. Fauna of Manitoba — Mammals and Birds (pp. 183-227) in: A Handbook to Winnipeg and the Province of Manitoba. Prepared for the 79th annual meeting of the British Association for the Advancement of Science, Winnipeg.

MERLINS BREEDING AT BRANDON, MANITOBA

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In the March 1978 issue of *Blue Jay* (vol. 36, no. 1) there is an article entitled "Merlins Wintering and Breeding at Brandon, Manitoba". This report included a 1977 nestin in Brandon Fair Grounds.

In 1978 a pair of Merlins nested i the Brandon Fair Grounds and raise five young. The first report in 1978 from a qualified observer, was of tw Merlins seen in February in the 197 nest area, and they were observe there in following months by severa people.

On 1 July, Hazel Patmore spotte the nest in a tall spruce tree, about a metre from the tip. At that time she and I saw three fluffy young birds one in the nest and two on branches near the nest. The parent birds seemed to keep watch from cottonwood trees to the west and one would sometimes fly over our heads screaming when we were near the nest tree. Earlier that day Hazel had seen a Merlin in a cottonwood with a small bird, which it was plucking. On 3 July, she saw four young birds in the nest tree. Observations on 10 July were of young Merlins in nearby trees. On 13 July, I saw five Merlins that I took to be young birds. They were flying low over an open grassy area southwest of the nest site, from crossbars of power poles, and would often fly up into trees in an adjacent park. They did not appear to be excited by my presence, unlike the usual behavior of a parent bird. I have a note of two of the young Merlins perching close together and picking at each other. My last summer record is of two birds seen on 23 July.

On 15 September, I heard a Merlin in the Fair Grounds, and have the following subsequent reports of a Merlin being seen and/or heard in the Fair Grounds or in Brandon Cemetery, which is approximately half a kilometre south: 22 September, 6 October, 3 November, 15, 24 (a female), and 25 December.

SASKATCHEWAN CHRISTMAS MAMMAL COUNT — 1978

Compiled by WAYNE C. HARRIS, Box 93, Raymore, Saskatchewan, S0A 3J0.

A total of 42 counts were submitted this year, recording 28 species during the count period. The number of counts is up one from last year's total while the number of species is the all time high — up four from last year. Three species not previously recorded on Christmas Mammal Counts were recorded this year — Raccoon at Indian Head and Spring Valley, River Otter at Prince Albert National Park and Bobcat at Eastend.

White-tailed Jack Rabbit and Snowshoe Hare populations remain high with many people commenting on their abundance. White-tailed Deer appear to be down slightly although numbers are still up over the average for the past six years.

Coyote numbers have remained similar to last year while the Red Fox has doubled over last year's count. The Lynx was unreported for the third year in a row. However trappers in the northern portion of the province have indicated that Lynx numbers are beginning to increase so the counts over the next couple of years should begin to record this species in the southern half of the province.

The only unusual species that was reported was the Gray Squirrel at Wauchope which returned to the same bird feeder it was seen at in 1973. The River Otter and Bobcat, though seldom reported, are probably not uncommon in their respective habitats.

For weather, coverage and participants of these counts please refer to the Christmas Bird Counts found elsewhere in this issue. Symbols found in the table are as follows:

* Identified by tracks with the estimated number of animals in parentheses.
+ Seen during count period but not on count day.
L Active lodges seen.
D Freshly dead animals found with the number in parentheses.

Muskrat. *J. B. Gollop*

	Bangor Jan. 1	Biggar Dec. 18	Broadview Dec. 20	Canora Dec. 26	Dalmeny Dec. 26	Duperow-Ruthilda Dec. 19	Eastend Dec. 24	Eastend Dec. 29	Emma Lake Dec. 29	Fort Qu'Appelle Dec. 16	Fort Walsh Dec. 28	Gardiner Dam Dec. 23	Glamis-Wiseton Dec. 26	. Grenfell Dec. 17	Humboldt Dec. 31	Indian Head Dec. 17	Kelvington Dec. 21	Kenaston Dec. 26	Lacadena Dec. 16	Langham Dec. 27	Leader Dec. 24	Loon Lake Dec. 29
Shrew sp.														•(1)								
Raccoon																3						
Red Fox					1	+	•(1)			1	2		•(1)	+		7		1				
Coyote			•(3)				•(2)	3	1	•(4)	•	1		+	•(1)	3			1			
Timber Wolf																						
Ermine			•(1)																			
Least Weasel													•(1)									
Long-tailed Weasel			•(4)										•(1)		•(3)	•(2)		•(3)		2		
Weasel sp.						•(2)		•(1)	1		•	•(3)		•(2)		•(2)						
Mink			•(2)					•(1)		3						•(2)						
River Otter																						
Striped Skunk			•(2)																			
Badger								•(1)			•											
Bobcat								•(1)														
White-tailed Jack Rabbit		•(20+)		1		•(15+)	14	3		1		1	2	1	•(10)	11+	6	2	1	•(3)		
Snowshoe Hare	2		•(13)		10				2	•(1)				+	•(50+)	13+	•(3)	•(4)	1			
Nuttall's Cottontail								4			•											
Red Squirrel			7						10	6	39					9	1					•1
Gray Squirrel																						
Beaver										•(1)						•(1)						
Deer Mouse										+												
Meadow Vole																1						
Mouse sp.														•(1)		•(5)				•(2)		
Muskrat										1												
Porcupine			1		1			•(1)			1				•(3)	4		•(1)	1	•(1)		
Elk									D(2)													
Mule Deer							4	6											15		12	
White-tailed Deer	5	2	•(18)					14	•(8+)	4	6	2		•(2)	•13	34			1		3	
Deer sp.																						
Moose											4											
Pronghorn																					100+	
Norway Rat																						
Total Species	2	2	9	1	3	3	4	10	6	10	9	4	4	8	6	14	3	5	6	4	3	1

	Luseland Dec. 29	MacDowall Dec. 16	Moose Jaw Dec. 26	Moose Mountain Park Dec. 31	Prince Albert Dec. 26	Prince Albert National Park Dec. 19	Raymore Dec. 19	Regina Dec. 26	Round Lake Dec. 31	Saskatoon Dec. 26	Somme Dec. 27	Spirit Lake Dec. 25	Spring Valley Dec. 24	Squaw Rapids Dec. 17	Wauchope Dec. 23	Webb-Swift Current Dec. 21	White Bear Dec. 30	Whitebeech Dec. 31	Wolseley Dec. 23	Yorkton Dec. 26	Skull Creek Dec. 28	Total Counts/Species
Shrew sp.																					·(1)	2
Raccoon													+									2
Red Fox	1		·(3)		·	5	·	3	·(1)	1			2	·	·(1)	·(10+)		+	·(1)		·(1)	25
Coyote	1	1	6		·	·(3)	·		·(3)	1		2	1	1		·(20±)	·(3)			·(2)	6·(8)	26
Timber Wolf						·(4)																1
Ermine						·(1)																2
Least Weasel									·(2)						·(1)			+		·(1)	·(1)	6
Long-tailed Weasel			·(1)						·(3)				1				·(1)		·(1)		·(2)	12
Weasel sp.	·(2)						·	·(2)		·(3)		·(2)		·								13
Mink			·(3)		1	·(7)		·(2)	·(2)				+	·(1)	·						·(2)	13
River Otter						·(5)																1
Striped Skunk																					·(1)	2
Badger													+								·(1)	4
Bobcat																					1·(2)	2
White-tailed Jack Rabbit	6	·(20)	·(10)		·		·	93	·(2)	1	3	·(10)	7		+	·(50+)	·(12)			·	5·(many)	31
Snowshoe Hare	·(2)		·(6)	2	·	·	5	13	·(34)	35	3	·(20)		1	5	·(2)		5	·(5)		2·(many)	28
Nuttall's Cottontail			·(6)							1			·				5				31·(many)	6
Red Squirrel		16		5	30+	3		2	·(3)			3		75				·(5)	1			18
Gray Squirrel															1							1
Beaver											1										·(3)	4
Deer Mouse																						1
Meadow Vole																						1
Mouse sp.	·	·(2)	·(3)		·	·(2)		·(12)		·(8)		·(2)			·		·(20)	1			·(30)	15
Muskrat																						1
Porcupine				1						1		1	+	1		1	·(1)		1	·(1)	·(2)	19
Elk						·					·(10)			7								4
Mule Deer																+	10				8	7
White-tailed Deer			·(5)	·(5)	·			·(5)	·(17)	1	·(30)	·(3)		4	15	17		·	·(3)	·	30·(many)	28
Deer sp.						·(8)	·															2
Moose				2		5					1			·(2)								5
Pronghorn													+									2
Norway Rat																					·2	1
Total Species	6	4	9	5	8	12	6	8	9	9	6	8	10	10	8	7	7	6	6	6	18	

A NEW SUBSPECIES OF LITTLE BROWN BAT FOR ALBERTA

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DAVID B. SCHOWALTER, Alberta Fish and Wildlife Division, Edmonton.

During a survey of colonies of little brown bat *Myotis lucifugus* in Alberta it was observed that bats from colonies in southern Alberta differed in color and probably size from bats from colonies in central Alberta. As a result of these observations museum collections were made in order to compare bats from the two regions.

Table 1 lists the locations of colonies from which the collections were made which were used in this study. Specimens are deposited in the Provincial Museum of Alberta.

When compared in a series, bats from colonies in the south are lighter in pelage colouration than those bats from northern colonies. The dorsal pelage of southern bats ranges in colour from light brown (almost blond) to medium brown, a few very dark individuals have been observed in colonies, however, none of these are represented in the collections. The northern bats are darker, ranging from reddish brown to dark brown. The pelage of the southern bats appears flatter and without the sheen that characterizes many northern bats. Flight membranes on the southern bats are also lighter in colour. There is frequently a white margin on the trailing edge of the flight membrane that is not evident on bats from colonies in central Alberta.

Table 2 compares some measurements of adult female bats. The sample for each colony was at least six bats. The initial impression of smaller size of southern bats is not supported by measurements of tail length and head/body length however, they are smaller in forearm length and greatest skull length.

Direct comparison of weights o bats from central and souther Alberta are difficult as weight varie greatly during the summer, howeve it is evident that the souther population tends to weigh less tha bats farther to the north (Fig. 1). Th two populations also differ in timing of birth. In central Alberta parturition is largely concentrated in late June (unpublished data, Alberta Fish and Wildlife Division). Captures of bats a a large bat colony at Warner indicated that parturition was only jus over half completed by 12 July 197 and still not complete on 21 Jul 1975. N. Previsich (pers. comm.) ha observed colonies near Lethbridge in which most of the young were born in the latter part of July. On the othe hand pregnancies of bats and development of juveniles in a colony near Brooks observed in late June were similar to that of bats in central Alberta. O'Farrell and Studier relate concentration of the time of parturition of *Myotis*, such as seen in central Alberta, to adult females having left hibernacula at approximately the same time, whereas a longer, variable period of parturition, as is seen in southern Alberta, is considered indicative o female bats leaving the hibernacula over a greater period of time.[7] If this is the case with little brown bats in Alberta the areas of hibernation o the central and southern populations would be expected to be different in limate and be relatively distant from ne another.

Sex and reproductive structure of t least some colonies in southern lberta appear to differ from that of olonies known elsewhere. Of 51 dult bats captured at Warner 12 July 977, 17 were pregnant or lactating emales, 24 were dry females and 10 ere adult males. Dry females and dult males seldom make up a ignificant proportion of individuals little brown bat nursery colonies nd their occurrence at Warner arrants further investigation.[5] ollections of adults at other olonies in southern Alberta during e summer and at Warner in early ummer are made up largely of eproductively active females, lthough preliminary data indicates at adult males are found more equently in maternity colonies than central Alberta.

Anderson,[1] Hall and Kelson,[4] and oper[9] report three subspecies of *yotis lucifugus* in Alberta; Banfield[2] eports two. *Myotis lucifugus ucifugus,* the most widely distributed ubspecies, generally is considered o occur over most of the non-ountainous portion of Alberta. It is medium sized *Myotis* approximately 97 mm in total length ith a dull brown pelage and rownish flight membranes.[9] *M. l. lascensis* is reported to occur in the outhwestern mountains. It is darker pelage and flight membrane olouration but similar in size to *M. l. ucifugus.*[8] Banfield does not consider this subspecies to occur in the rovince.[2] *M. l. pernox* is known from e mountains from Hinton-Entrance est to the Jasper area. It is reported have a larger skull than *M. l. ucifugus* and to have blacker flight embranes.[8] [9] It appears unlikely at the population found in southern lberta can be assigned to any of ese subspecies.

Table 1. LOCATIONS AND NUMBER OF SPECIMENS OF LITTLE BROWN BATS COLLECTED IN ALBERTA.

Location	*No. Specimens*
Atmore	17
Champion	21
High River	10
Lac La Biche	7
New Norway	10
Pigeon Lake	10
Schuler	9
Stony Plain	6
Vilna	8
Warner	21

In their review of *Myotis*, Miller and Allen indicate that the subspecies *M. l. carissima* has a paler colour than *M. l. lucifugus* and that the "edges of the interfemoral membrane and parts of the posterior edge of the wing membrane may be whitish, sometimes forming a distinct border."[6] In view of this description of *M. l. carissima,* the similarity of measurements (Table 3), and the proximity to known occurrences of the subspecies (Fig. 2), we believe the little brown bats from the plains region of southern Alberta to be *M. l. carissima.* The reported Canadian distribution of *M. l. carissima* is the Okanagan area of southern British Columbia.[3] Hall and Kelson show the northern range of the subspecies as terminating at the international boundary in Montana (Fig. 2).[4] The extent of the distribution of the subspecies in Saskatchewan was examined by inspection of rabies-suspect bats from that province. None of these specimens are preserved in museums, and collections are needed to verify these results. Based on bats available to us we believe that *M. l. carissima* occurs over the non-mountainous portions of southern Alberta and southwestern Saskatchewan (Fig. 2).

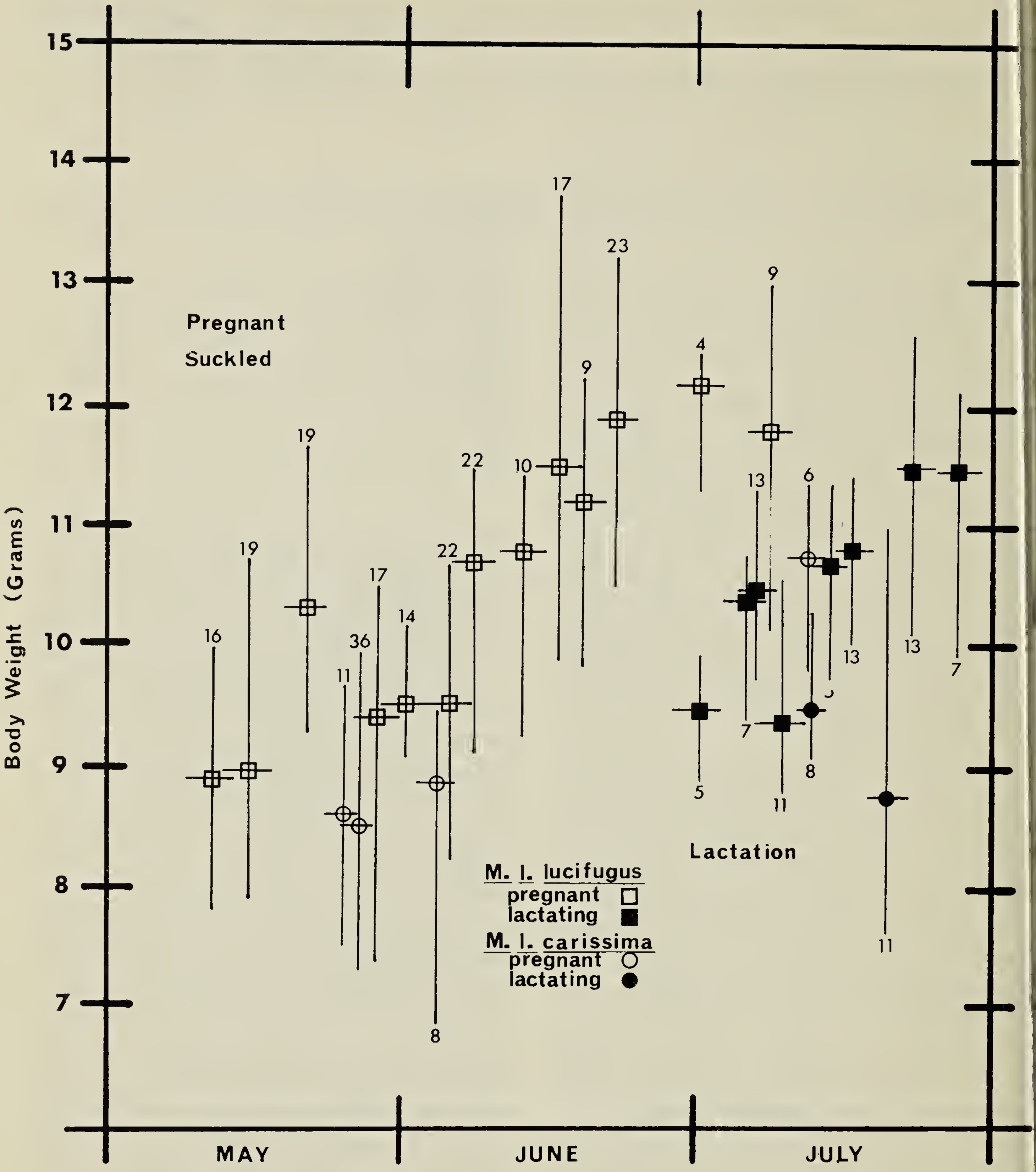
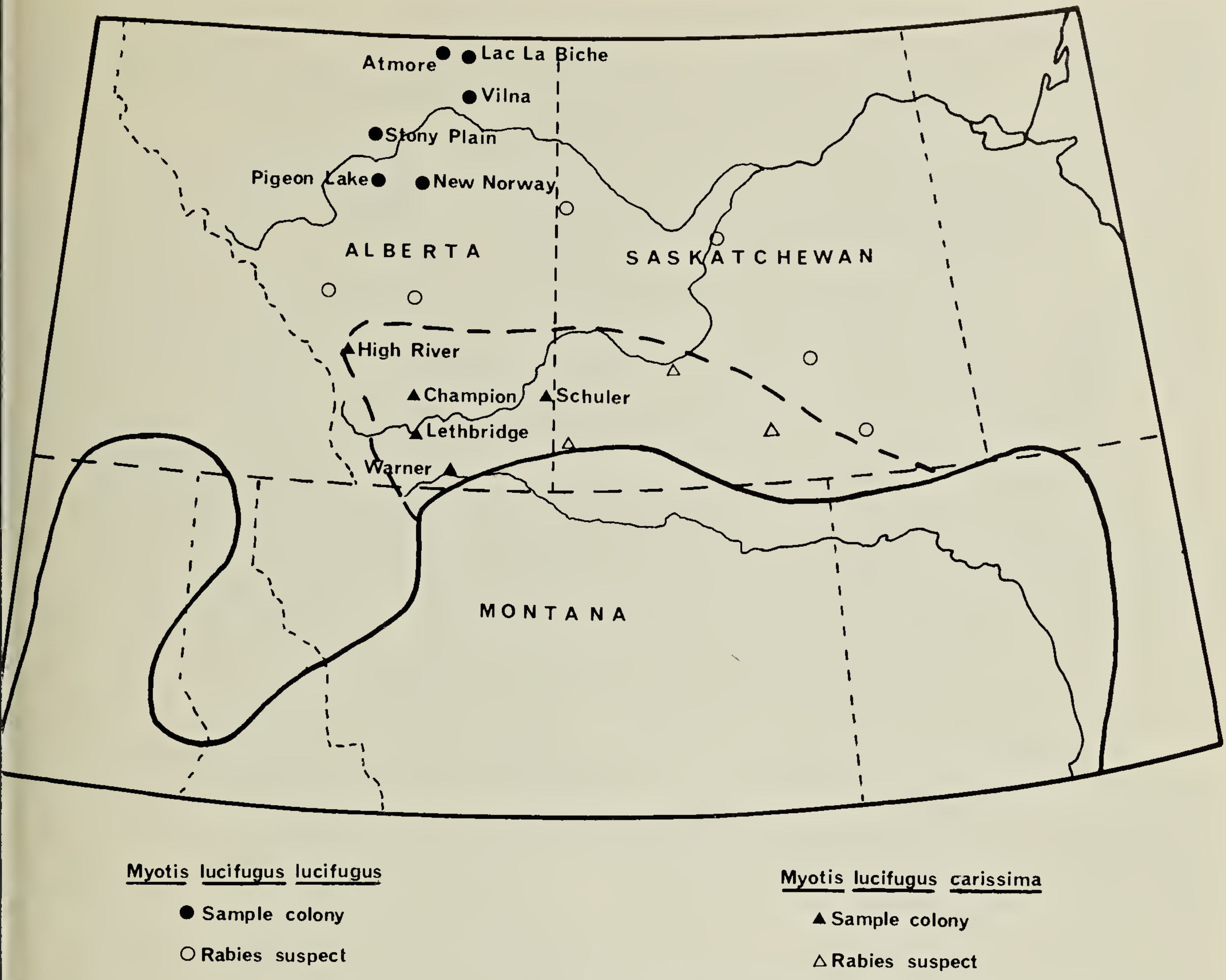


Figure 1. Summer weights of female Myotis lucifugus.

Table 2. SELECTED MEASUREMENTS OF ADULT FEMALE LITTLE BROWN BATS.

	Northern Colonies (n=8)		Southern Colonies (n=3)	
	Range	*Mean*	*Range*	*Mean*
Tail	33-46	37.7	32-44	38.4
Head and Body	47-61	51.4	46.57	51.4
Dried Forearm	36.1-41.2	38.08	34.7-39.1	36.9
Greatest Skull Length	14.04-15.78	15.05	14.21-15.47	14.83



igure 2: Range of Myotis lucifugus carissima. *Solid line as per Hall and Kelson (1959). roken line as proposed by the authors.*

The Agriculture Canada Animal iseases Research Institute Vestern) gave us access to rabies ıspect bats from Saskatchewan. ick Previsich's continued interest in ats and generosity with data have een outstanding. The Alberta Fish and Wildlife Division bat research program is funded through the Veterinary Services Division of the Alberta Department of Agriculture. The continued interest and support of H. Vance and G. Whenham is greatly appreciated.

able 3. COMPARISON OF SELECTED MEASUREMENTS OF *MYOTIS JCIFUGUS CARISSIMA* FROM NORTHERN UNITED STATES AND FROM OUTHERN ALBERTA.

	*M.l. carissima**	*M. lucifugus* from southern Alberta
ail	38.4	38.4
ead/Body	49.1	51.4
ried Forearm	37.7	36.9
reatest Skull Length	14.95	14.83

Miller and Allen, 1928)

Little Brown Bat M. l. carissima *at Warner, Alberta.* *Lawrence D. Harde*

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ATURE LIBRARY

ATCHING BIRDS: N INTRODUCTION TO RNITHOLOGY

OGER F. PASQUIER. 1977. ughton Mifflin Co., Boston. 301 . $10.00.

Have you ever wondered what ves a feather its colour . . . what is e meaning of a bird's song? . . . w a bird navigates?

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The book has an introduction by ger Tory Peterson, 112 attractive ack-and-white illustrations by argaret La Farge, a suggested ading list of 101 books and an ap- ndix listing ornithological and nservation organizations, their agazines and journals.

Pasquier gives many interesting eces of information. We learn, for ample, that birds use tools — the odpecker Finch of the Galapagos es a thorn to probe for insects on es, while the Egyptian Vulture es stones, throw with its bill, to break open Ostrich eggs. Two unusual incubating techniques are treated. The hole-nesting hornbills of Africa and south Asia plaster mud over the entrance sealing in the female with her eggs; the male then feeds her through a hole in the mud. A second curious behaviour is that of the male megapodes of Australia, which spend the entire year tending a nest pile in which several females lay eggs. The male then buries them and adjusts the amount of sand, warm volcanic ash or rotting vegetation on the nest. Young megapodes hatch fully feathered and capable of flight. Of perennial interest is the question of bird navigation. How is one to explain for example, that a Manx Shearwater released at Boston, 3,050 miles from its home in Wales, was back at its burrow in 12½ days.

Watching Birds is a book for the beginning bird watcher, to be used as a companion to the field guides, a book that ". . . will show you ways to consider your own observations and will encourage you to investigate further the life of birds in the environment we all share." — Reviewed by *B. W. Johns,* 51 Beurling Cresc., Saskatoon, Saskatchewan, S7H 4V6.

RARE VASCULAR PLANTS OF SASKATCHEWAN

The Rare Vascular Plants of Saskatchewan has just been published by the National Museum of Natural Sciences as one of its "Syllogeus Series" on the rare plants of the provinces. It is written jointly by R. A. Maher and G. W. Argus of the Rare and Endangered Plants Project of the National Herbarium, and V. L. Harms and J. H. Hudson of the W. P. Fraser Herbarium of the University of Saskatchewan. It is an annotated list with information on the distribution and habitats of the plants in Saskatchewan, their status in the rest of Canada and in the United States, and the legal protection afforded them. Provincial distribution maps and an extensive bibliography are included.

In the introduction, the aims of the Rare and Endangered Plants Project are discussed, and the phytogeography of rare plants and their protection in Saskatchewan is reviewed.

Copies are available free from The Rare and Endangered Plants Project, Botany Division, National Museum of Natural Sciences, Ottawa, K1A 0M8.

NATURE AND CHANGE ON THE CANADIAN PLAINS

The proceedings of the 1977 Annual Meeting of the Canadian Nature Federation have been published by the Canadian Plains Research Center as *Nature and Change on the Canadian Plains.*

Editor W. A. Davies selected and edited papers to provide a comprehensive view of the Regina conference. The more than 200 page publication is available for $7.00 from the Canadian Plains Research Center, University of Regina, or the Blue Jay Bookshop.

INLAND BIRD BANDING

The Inland Bird Bandin Association is making a number c changes to their journal. It is no called *Inland Bird Banding,* and wi be a quarterly refereed journa similar in format to the *Wilso Bulletin.* They are solicitin manuscripts less than 10 pages i length dealing with bird bandin techniques and the results of bir banding studies. Please sen material to the Editor, Jerome Jackson, Dept. of Biological Sciences, Mississippi State University Mississippi State, Mississippi 39762

BLUEBIRD MAGAZINE

Bluebird enthusiasts will welcom the formation of The North America Bluebird Society and their new magazine *Sialia.* The first 40 page issue carries a wide range of article including a profile of the late John Lane of Brandon.

Memberships in the Society including a subscription to the quarterly journal are available for $10.0 from Box 6295, Silver Springs Maryland 20906.

SUMMER MEETING AT EASTEND, SASKATCHEWAN

The 1979 annual summer field meeting will be held at Eastend, Saskatchewan on June 15-16, 1979. Guided trips and illustrated talks will help naturalists to become familiar with this section of southwestern Saskatchewan. Details of the meeting arrangements will be published in the Spring issue of the SNHS Newsletter.

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